

Report Quality Evaluation

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- | | | |
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6. Which topics in the report were the most useful? Why? _____

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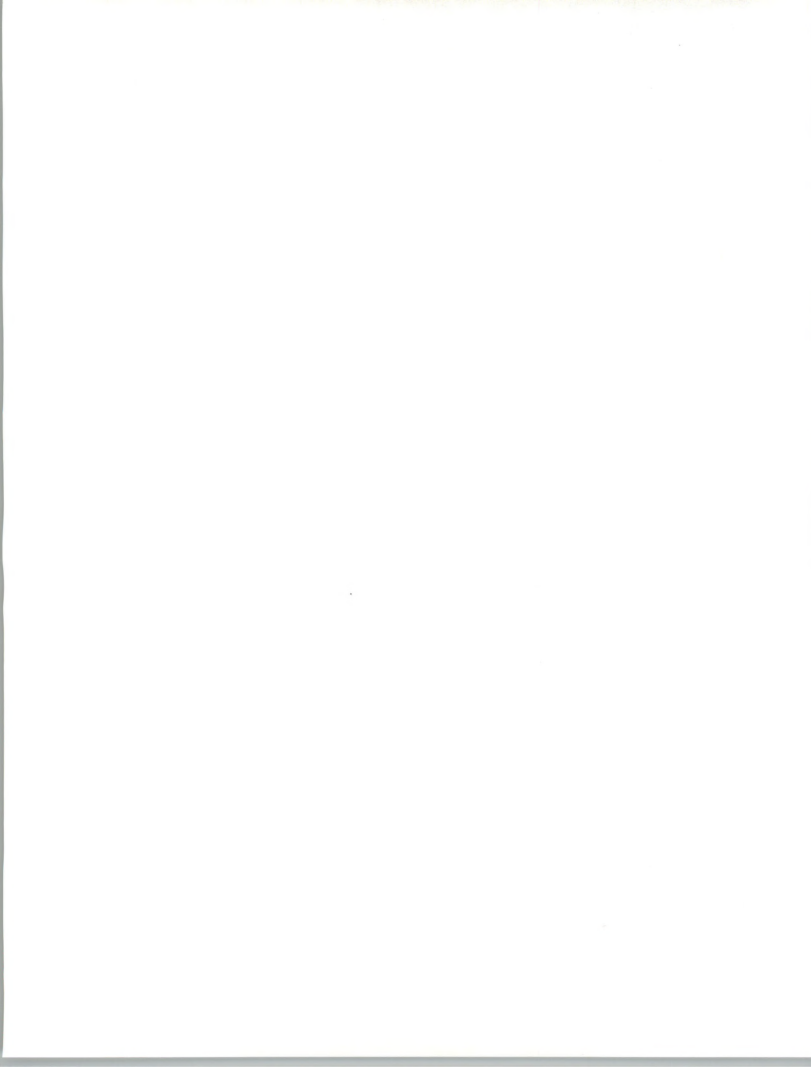
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S E P T E M B E R 1 9 9 0

USER SATISFACTION WITH VENDOR CUSTOMER SERVICES

SMALL SYSTEMS WESTERN EUROPE

1990



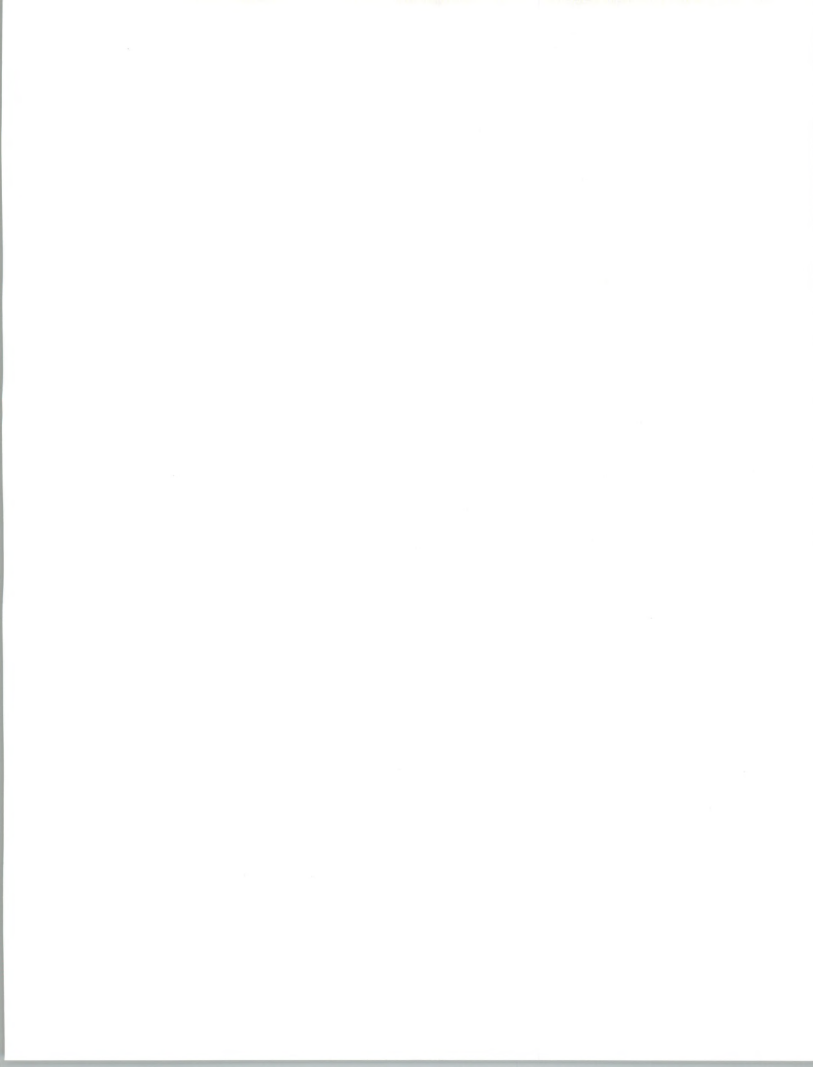
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**Customer Service Programme in Europe
(CSPE)**

***User Satisfaction with Vendor Customer
Services—Small Systems, Western Europe,
1990***

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Abstract

This report presents a set of data relating user perceptions of vendor service performance and user satisfaction with the servicing of small systems.

The data presented in this report has been collected by INPUT during the first half of 1990 in a survey of computer users in the following countries:

- Belgium
- France
- Italy
- The Netherlands
- Norway
- Spain
- Sweden
- Switzerland
- West Germany
- The United Kingdom

This report contains 65 pages including 65 exhibits.

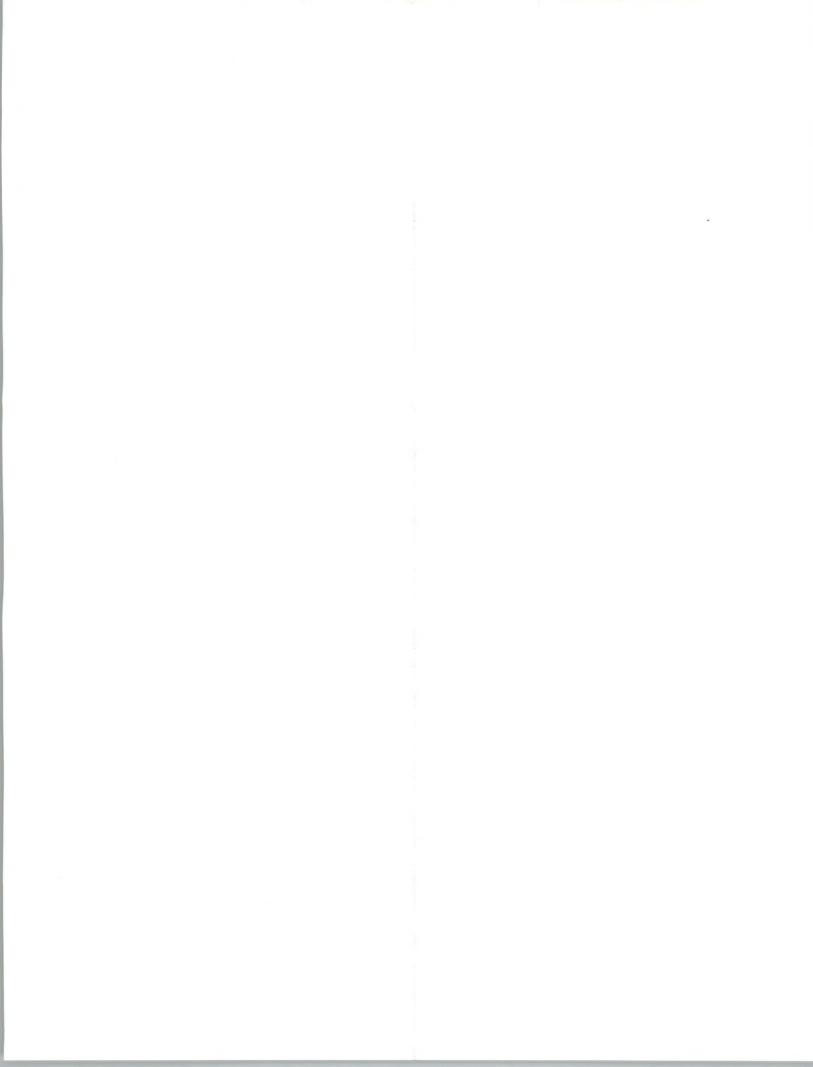


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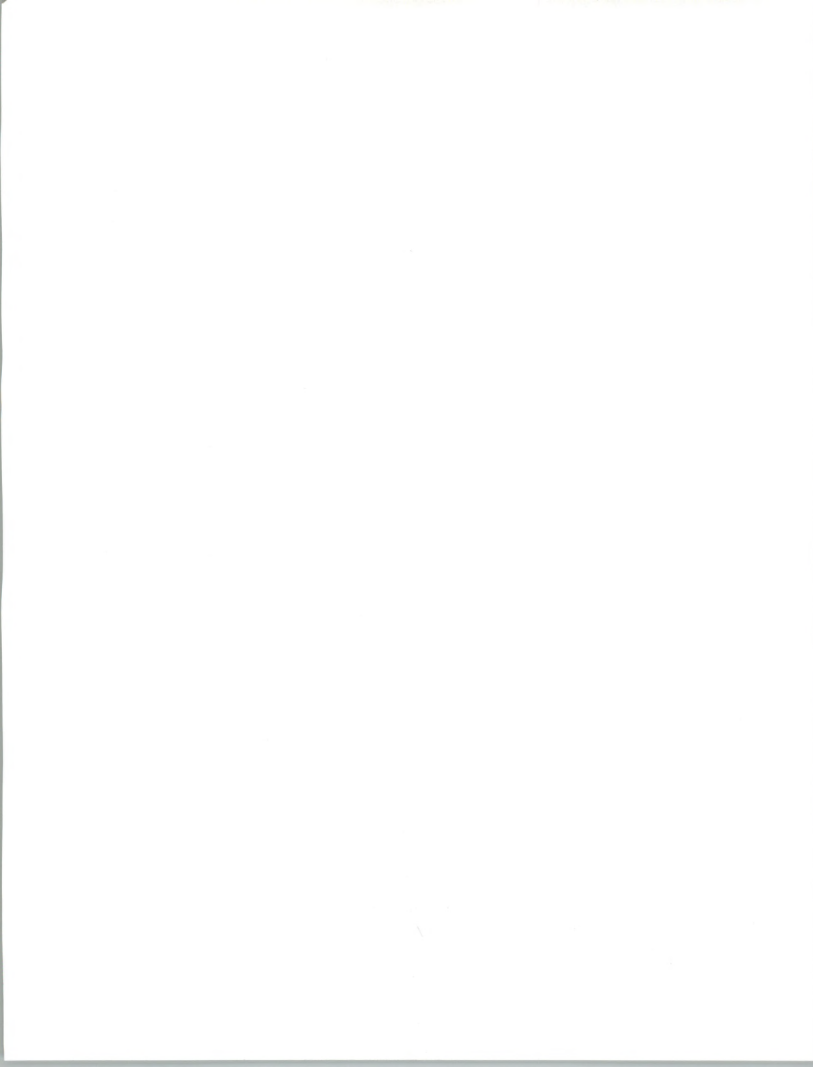


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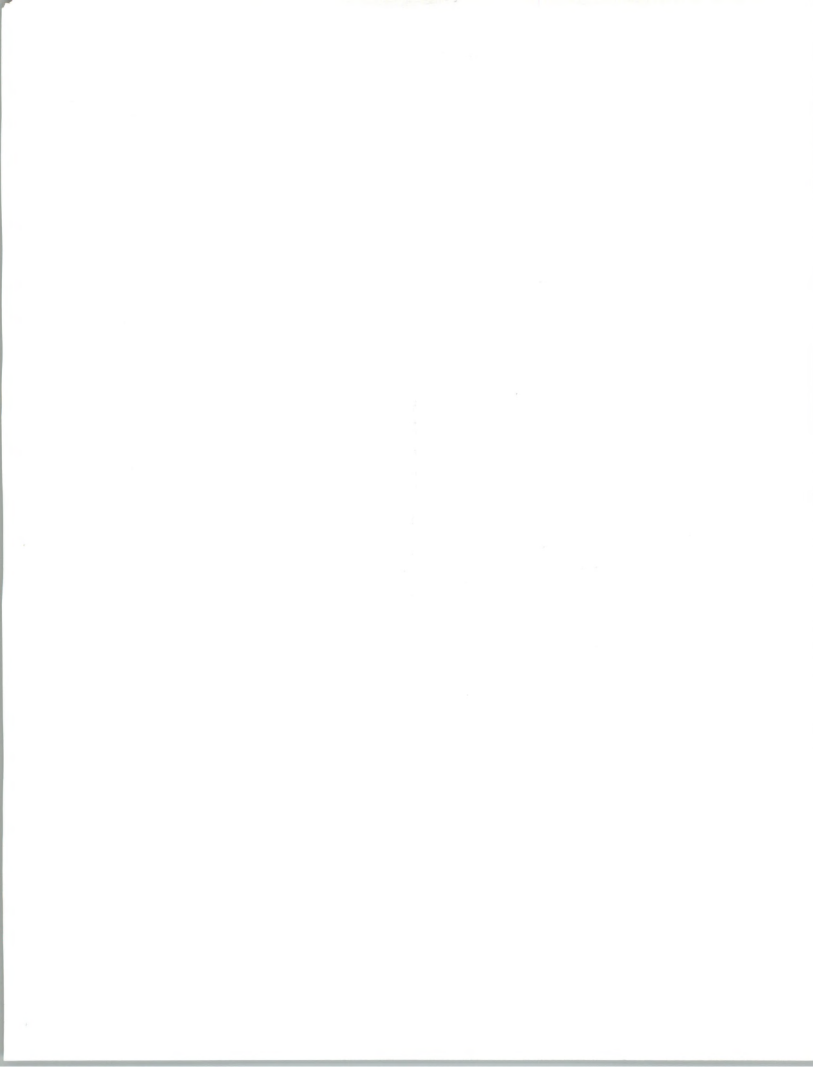
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Introduction







Introduction

A

Objectives and Scope

This INPUT 1990 interim report on user requirements for customer service in Western Europe presents the small systems computer user's view of many aspects of computer system service and support.

The report is intended to provide data to enable service vendors to assess the service performance levels achieved by their service organisations in 1990. Data, which relates to user perception of major vendor service performance, is presented in simple, tabulated form. Trends relating to service performance can be assessed by comparing the data contained in this report with previous INPUT Annual Reports.

The report also contains tabulated data relating to the Western European user population to enable vendors to compare their performance with overall mean values of Western European vendor performance.

B

Methodology

The data presented in this report was compiled from interviews with 205 small systems computer users throughout Western Europe. Users were chosen at random and interviewed by telephone in their native languages when necessary. The basis of user interviews was a questionnaire covering over 100 aspects of service and support, compiled from discussions with major service vendors. A copy of the user questionnaire is included as Appendix A.

Analysis contained within this report is focused on major equipment vendors.

Details of the user sample analysed in this report are provided by Exhibits I-1 and Exhibit I-2.



EXHIBIT I-1

User Sample by Vendor

Vendor	System Range			Total
	Large	Medium	Small	
Bull	7	34	36	77
Digital	27	27	24	78
Hewlett-Packard	-	59	10	69
IBM	43	118	40	201
ICL	30	44	26	100
NCR	6	17	-	23
Siemens	5	15	3	23
Unisys	17	41	15	73
Wang	20	28	30	78
Other Vendors	3	64	21	88
Total	158	447	205	810

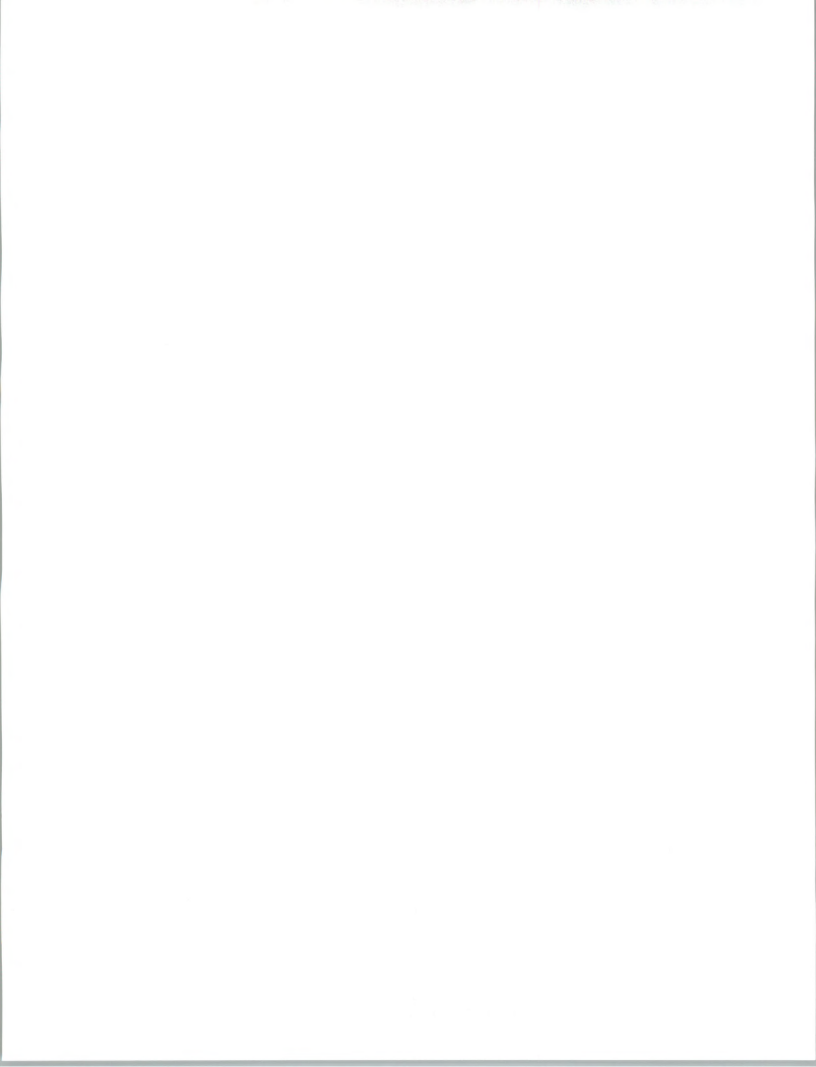


EXHIBIT I-2

User Sample by Country

Country	System Range			Total
	Large	Medium	Small	
Belgium	4	7	3	14
France	19	85	53	157
Germany	21	82	22	125
Italy	31	46	23	100
Netherlands	5	41	15	61
Norway	4	10	6	20
Spain	22	49	16	87
Sweden	8	24	8	40
Switzerland	4	17	6	27
United Kingdom	40	86	53	179
Total	158	447	205	810

C**Report Structure**

The remaining chapters of this report are structured as follows:

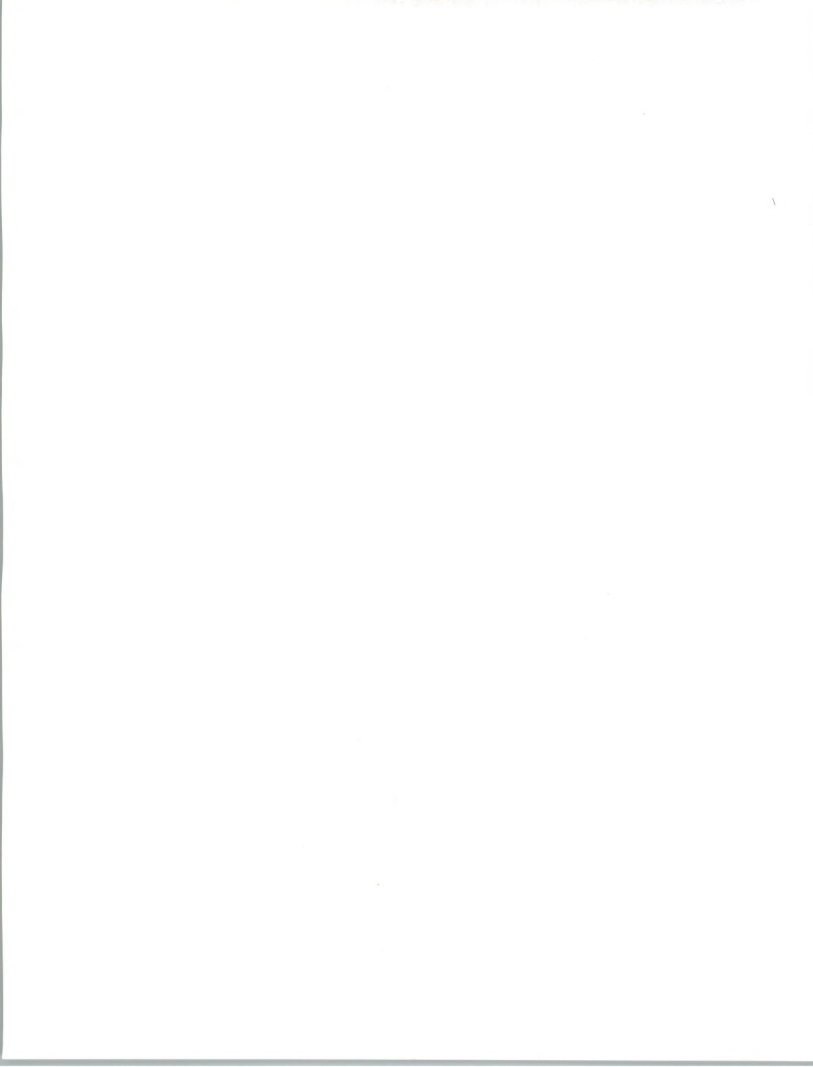
- Chapter II explains the basis of the statistics, the correct method of interpretation and ways of doing simple comparisons.
- Chapter III contains tabulated data and mean values relating to user perception of service performance overall in Western Europe.
- Chapter IV contains tabulated data relating to user perception of major equipment vendors' service performance.
- Appendix A contains the questionnaire used for user interviews.





Interpretation of the Data







Interpretation of the Data

A

Definitions

- Hardware: any computer system or peripheral system
- Software: operating systems software, not applications software
- Large system: a system that is considered by the vendor part of that vendor's large system product range—for example, IBM 309X and 308X, Bull DPS 8, or Digital VAX 8XXX
- Medium system: a system that is considered by the vendor part of that vendor's medium system product range—for example, IBM 43XX and AS400, Bull DPS 7, or Digital VAX 6XXX
- Small system: a system that is considered by the vendor part of that vendor's small system product range—for example, IBM S34 and S36, Bull DPS6 or Digital MicroVAX
- Documentation: user documentation, provided by the product vendor, that relates to operation and use of the computer system hardware or systems software
- Standard error (of the mean): the standard deviation (SD) of the sample divided by the square root of the sample size

B

Statistics

Mean values are used throughout the data presented in this report. These mean values refer to either the mean value of user sample ratings for specific aspects of service performance, or to the overall mean value for a range of service performance factors. In either case, the mean value calculation is weighted according to the number of user responses recorded.



The standard error for individual vendor data has been estimated for each set of tabulated data, and calculation of the estimated standard error is based on the standard error for the overall sample across all ranges of system size. In general, the collective values from a large sample follow a normal distribution; readers of this report can accept that a deviation of individual vendor sample means—of more than four times the standard error from the population sample mean—is very unlikely. Hence, the deviation would indicate a significant difference. In statistical terms, the probability of the mean for the total of all users in Europe being more than three times the standard error of the mean of the sample (total user sample is 810 for all system ranges) away from the sample mean, is about 0.4%.

In analysing the data presented in this report, INPUT carefully reviewed all the answers given during the interviews; when these answers were considered to be a gross departure from the norm, the data was dis-counted. The objective of this exercise was to eliminate the worst effects of skew on distributions due to gross distortions.

Statistically, small sample sizes create difficulties because they may not be totally indicative of the populations they represent. Although in the interests of completeness INPUT has included data relating to small samples—because these form part of a larger overall vendor sample—caution is recommended in assessing data from these small samples. A sample size of 20 should be considered the minimum to produce a statistically valid result.

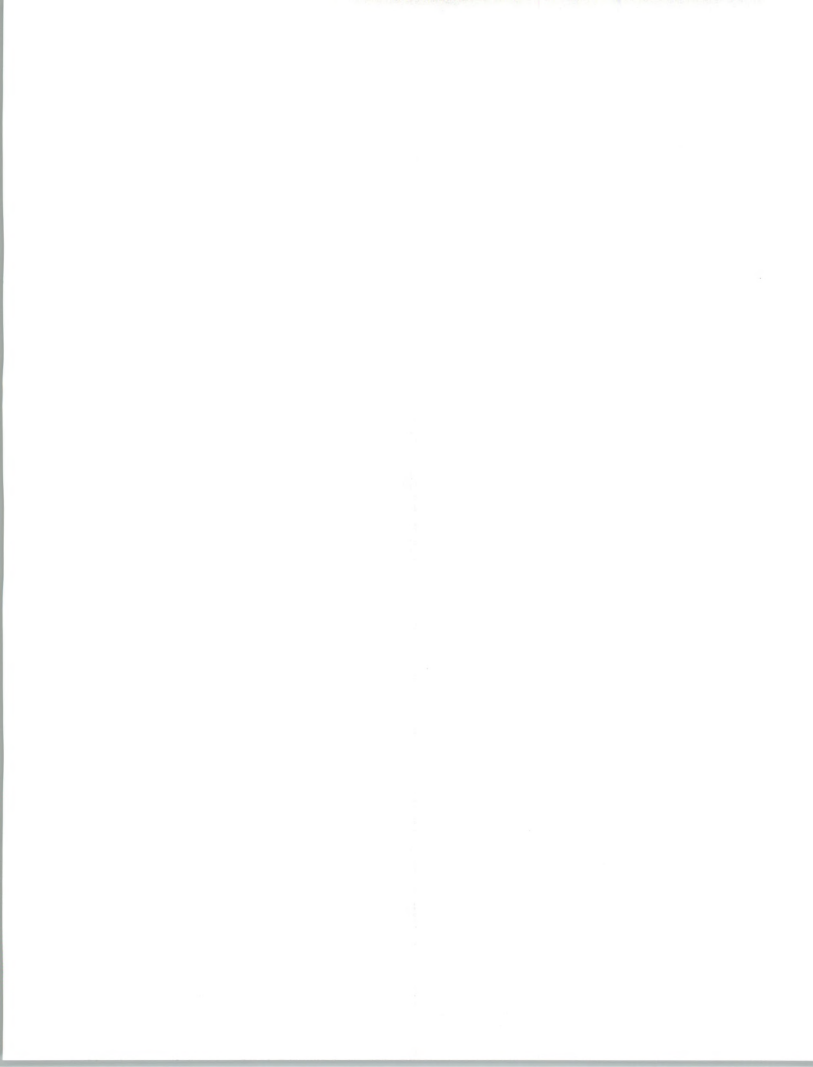
C

Ratings and Satisfaction Index

In this report, ratings for importance and satisfaction are on a scale of 0 to 10 where:

- Importance
 - 0 = of no importance whatsoever
 - 5 = of average importance
 - 10 = of extreme importance
- Satisfaction
 - 0 = total and absolute dissatisfaction
 - 5 = average satisfaction
 - 10 = total satisfaction

The satisfaction index throughout this report is based on the difference between the importance and satisfaction ratings for specific aspects of service. The questions concerning importance and satisfaction were asked at the same time, and the answers therefore reflect the respondent's value judgment at that time.



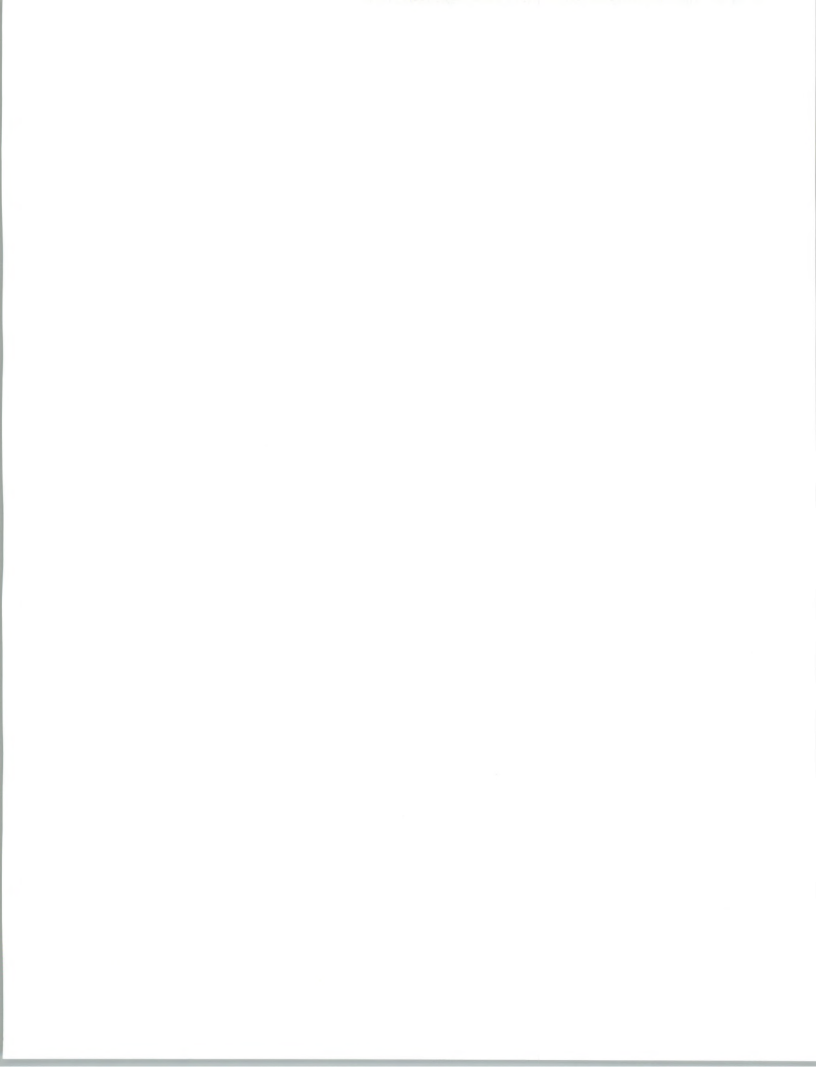
- Ratings of 10 and 10, or 6 and 6, for example, result in a difference value of zero, indicating that the importance needs are fully satisfied.
- Ratings of 8 for importance and 9 for satisfaction would indicate overfulfillment of the importance needs, and would result in a satisfaction index of -1. In INPUT's analysis, an overfulfillment of -1 is represented as (1).
- Ratings of 6 for importance and 5 for satisfaction indicate underfulfillment of the importance needs and would give a satisfaction index of 1. The degree of underfulfillment is related to the magnitude of this difference.
- The satisfaction index can thus be interpreted as follows:
 - (1) = overfulfilled or oversatisfied
 - 0 = completely satisfied
 - 1 = concerns and worries
 - 2 = real dissatisfaction
 - 3 = pain level





Western European Service Performance Data

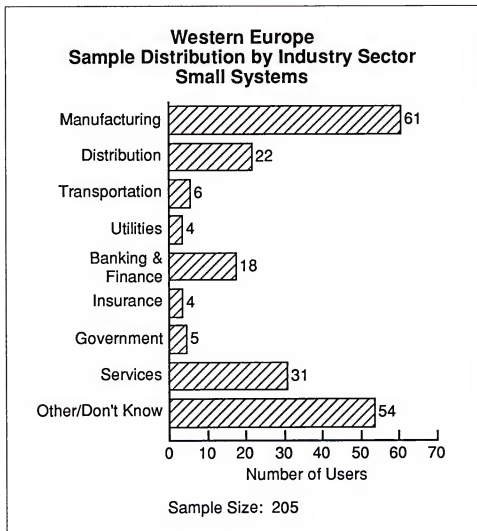






Western European Service Performance Data

EXHIBIT III-1



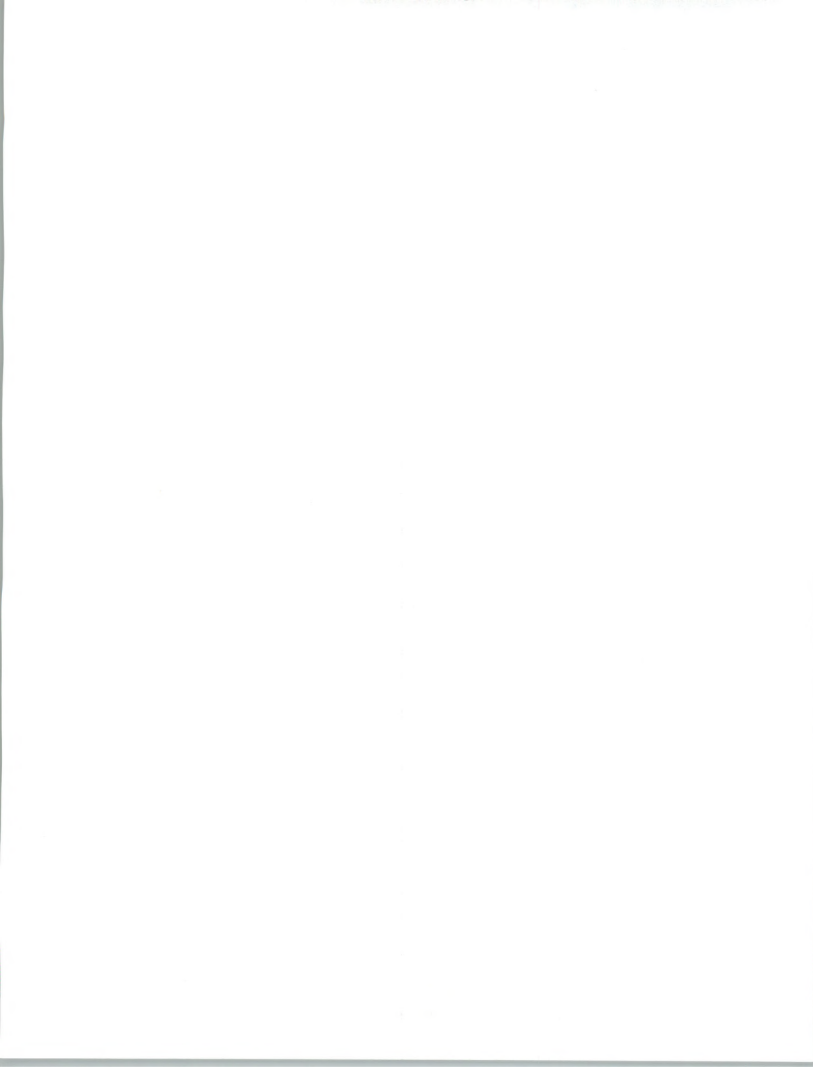


EXHIBIT III-2

**Western Europe
Hardware Service Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.6	7.7	0.9
Engineer Skills	8.8	8.1	0.7
Problem Escalation	7.9	7.3	0.6
Documentation	7.8	6.7	1.1
Remote Diagnostics	7.6	6.9	0.7
Average	8.2	7.4	0.8

Sample Size: 205

Standard Error: 0.15

EXHIBIT III-3

**Western Europe
Systems Software Support Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.7	7.7	1.0
Documentation	8.4	6.8	1.6
Software Installation	8.3	7.7	0.6
Provision of Updates	8.3	7.2	1.1
Remote Diagnostics	8.0	7.0	1.0
Average	8.4	7.3	1.1

Sample Size: 205

Standard Error:
0.15



EXHIBIT III-4

Western Europe System Performance Data Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
3.1	66	13	3	18

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.0	8.2	0.8

Sample Size: 205

Standard Error: Failure Rate: 0.2

System Availability: 0.15



Western Europe Service Response and Repair/Fix Time Performance Small Systems

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
5.7	7.1	1.4	4.9	4.6	(0.3)	10.6	11.7	1.1

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
7.9	9.7	1.8	5.3	5.7	0.4	13.2	15.4	2.2

Sample Size: 205

Standard Error: 0.8



EXHIBIT III-6

Western Europe Service Provider Data Small Systems

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
80	7	14	2	1

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
60	16	4	1	16	4

Sample Size: 205

Standard Error: 0.1

Note: Multiple Responses Allowed

EXHIBIT III-7

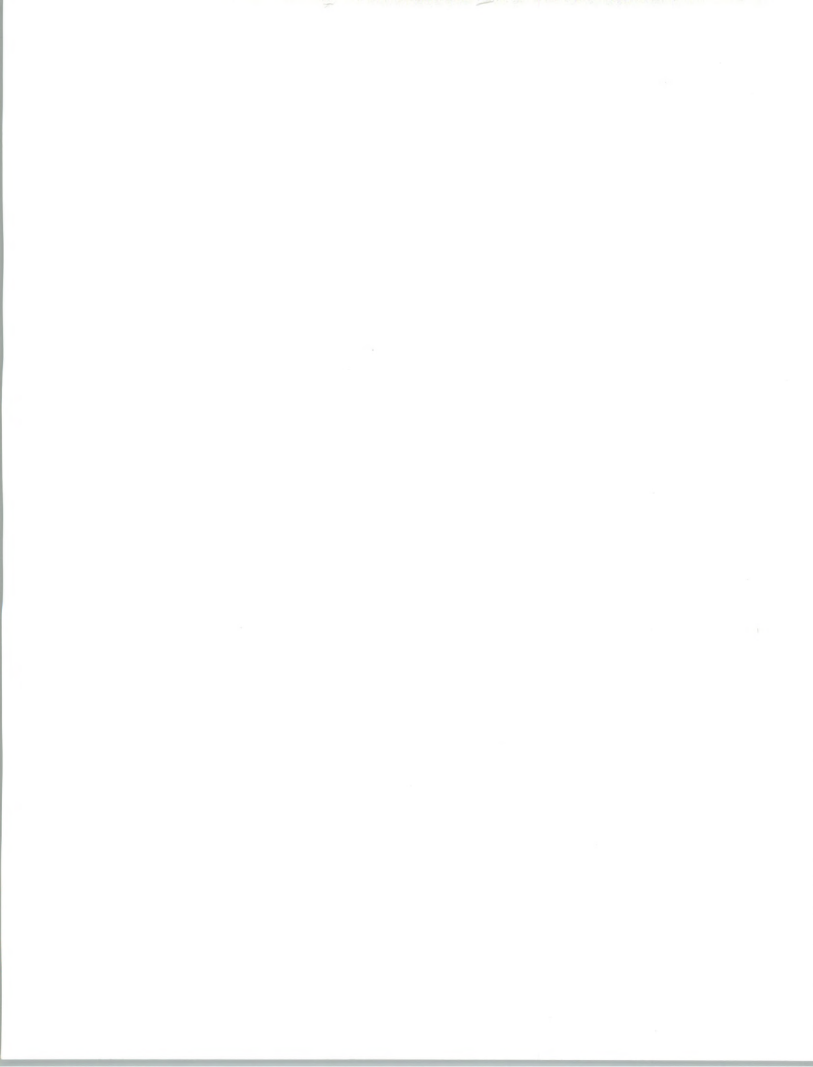
Western Europe User Views on Current Service Performance Small Systems

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.8	8.0	0.8

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.0	8.0	1.0

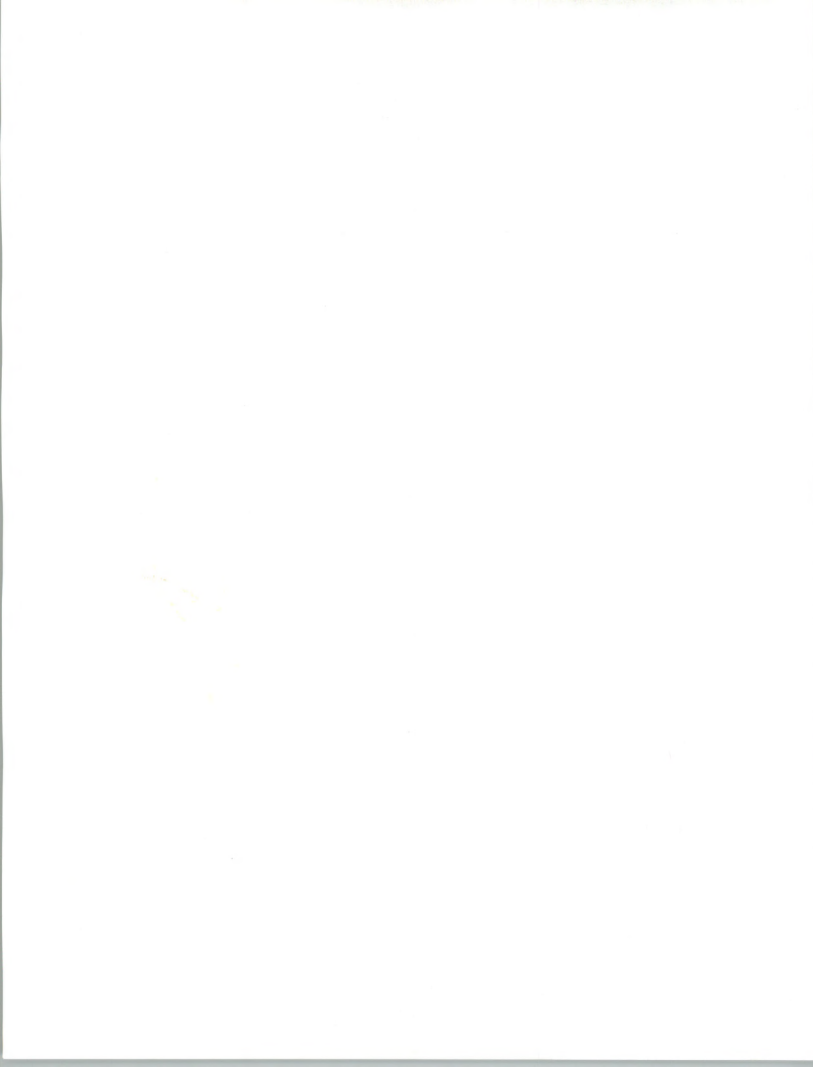
Sample Size: 205

Standard Error: 0.15





Vendor Performance Data

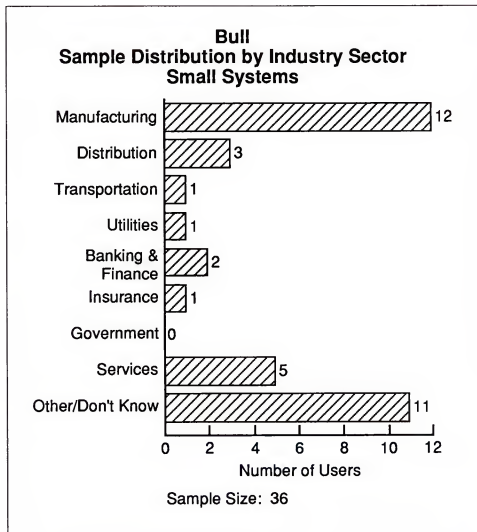




Vendor Performance Data

A**Bull**

EXHIBIT IV-1



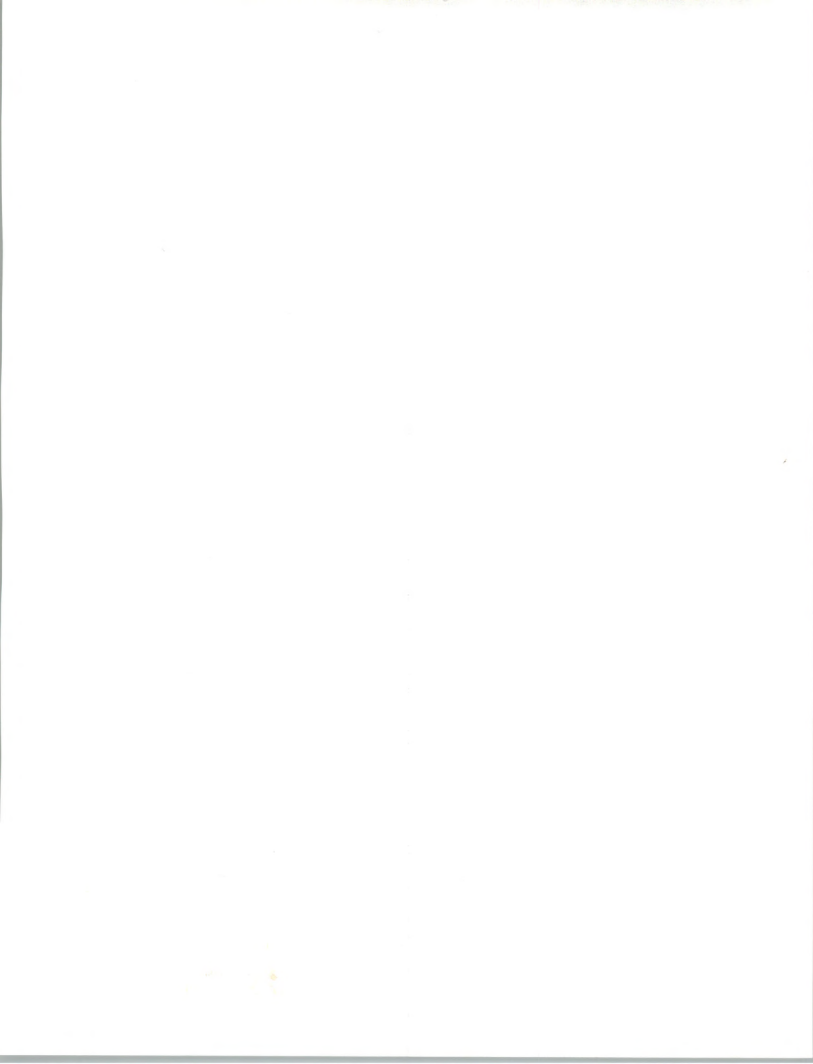


EXHIBIT IV-2

Bull
Hardware Service Satisfaction
Small Systems

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.3	7.7	0.6
Engineer Skills	8.5	8.2	0.3
Problem Escalation	7.6	7.3	0.3
Documentation	7.3	6.4	0.9
Remote Diagnostics	7.4	7.1	0.3
Average	7.9	7.4	0.5

Sample Size: 36

Standard Error: 0.35

EXHIBIT IV-3

Bull
Systems Software Support Satisfaction
Small Systems

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.6	8.1	0.5
Documentation	8.3	6.6	1.7
Software Installation	8.3	7.5	0.8
Provision of Updates	8.2	7.6	0.6
Remote Diagnostics	8.1	7.1	1.0
Average	8.3	7.4	0.9

Sample Size: 36

Standard Error: 0.35

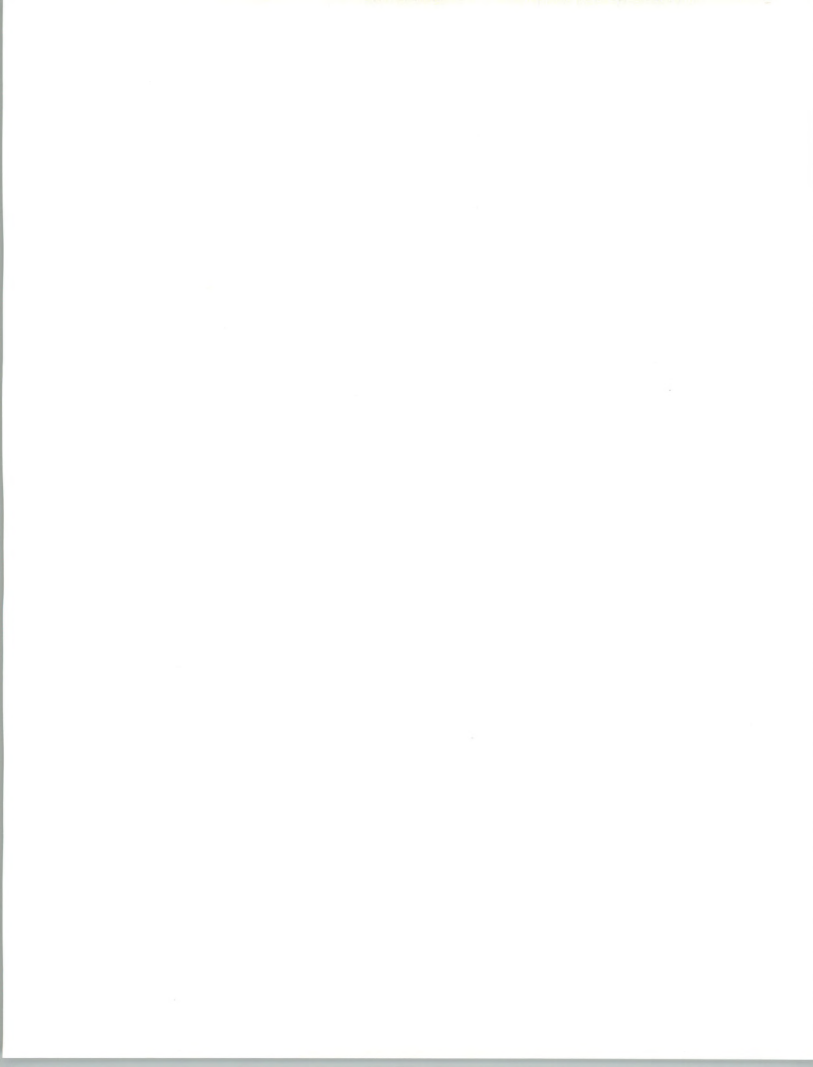


EXHIBIT IV-4

**Bull
System Performance Data
Small Systems**

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
4.1	76	15	0	9

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.1	8.2	0.9

Sample Size: 36

Standard Error: Failure Rate: 0.45

System Availability: 0.35



**Bull
Service Response and Repair/Fix Time Performance
Small Systems**

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
3.6	3.9	0.3	3.3	3.3	0.0	6.9	7.2	0.3

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
4.3	5.4	1.1	3.7	4.0	0.3	8.0	9.4	1.4

Sample Size: 36

Standard Error: 2.0

EXHIBIT IV-6

**Bull
Service Provider Data
Small Systems**

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
97	3	3	0	0

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
78	11	3	0	36	0

Sample Size: 36

Note: Multiple Responses Allowed

Standard Error: 0.25

EXHIBIT IV-7

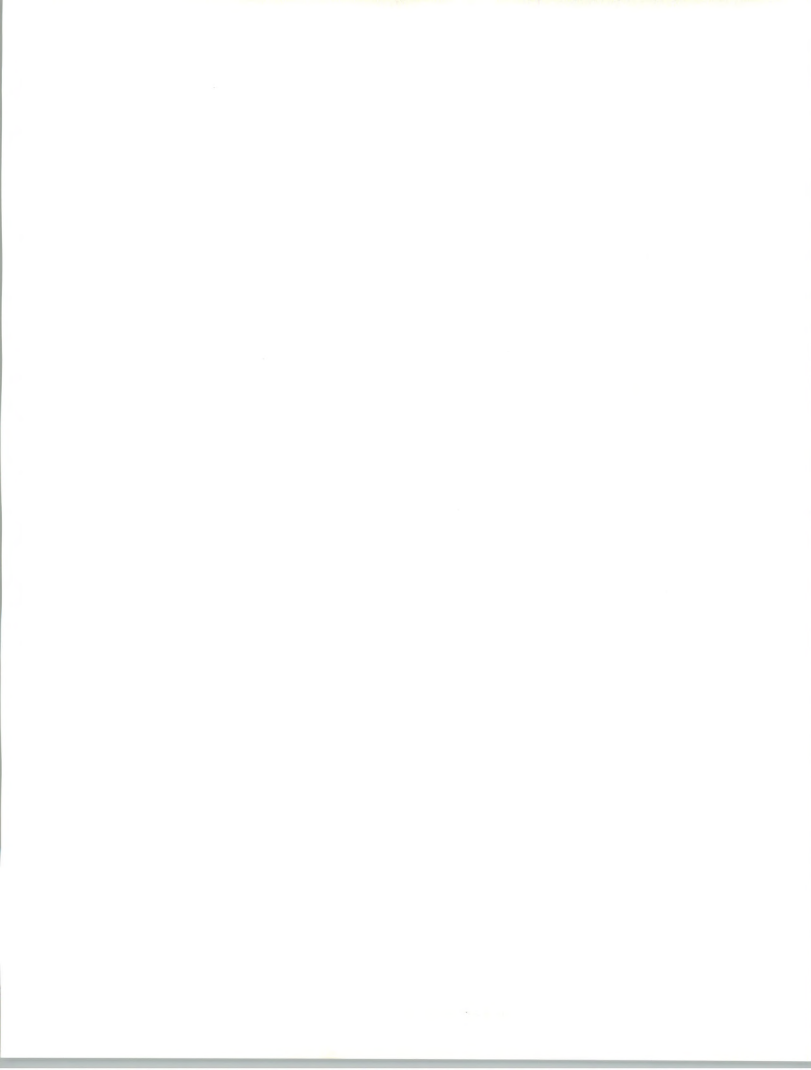
**Bull
User Views on
Current Service Performance
Small Systems**

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.5	7.8	0.7

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.9	8.0	0.9

Sample Size: 36

Standard Error: 0.35



B**Digital**

EXHIBIT IV-8

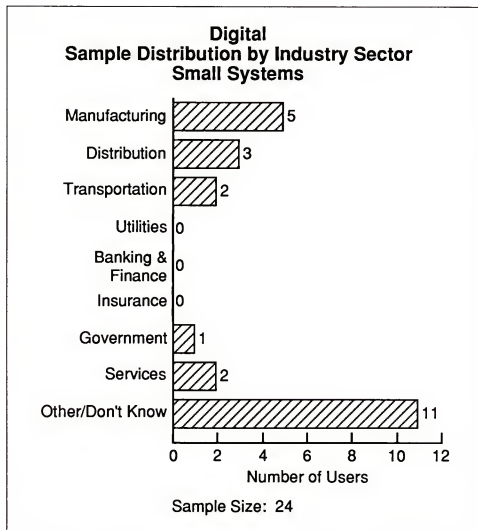




EXHIBIT IV-9

Digital Hardware Service Satisfaction Small Systems

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.6	7.9	0.7
Engineer Skills	8.9	8.1	0.8
Problem Escalation	8.2	7.8	0.4
Documentation	8.5	7.2	1.3
Remote Diagnostics	7.9	7.1	0.8
Average	8.5	7.7	0.8

Sample Size: 24

Standard Error: 0.45

EXHIBIT IV-10

Digital Systems Software Support Satisfaction Small Systems

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.6	7.8	0.8
Documentation	8.6	7.3	1.3
Software Installation	8.2	8.3	(0.1)
Provision of Updates	8.4	7.6	0.8
Remote Diagnostics	7.6	7.5	0.1
Average	8.4	7.7	0.7

Sample Size: 24

Standard Error: 0.45



EXHIBIT IV-11

**Digital
System Performance Data
Small Systems**

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
3.1	69	23	0	8

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.6	8.8	0.8

Sample Size: 24

Standard Error: Failure Rate: 0.55

System Availability: 0.45



Digital Service Response and Repair/Fix Time Performance Small Systems

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
5.7	7.9	2.2	5.6	5.3	(0.3)	11.3	13.2	1.9

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
7.4	11.7	4.3	5.2	4.7	(0.5)	12.6	16.4	3.8

Sample Size: 24

Standard Error: 2.5



EXHIBIT IV-13

Digital Service Provider Data Small Systems

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
79	0	21	4	0

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
63	33	0	0	4	0

Sample Size: 24

Note: Multiple Responses Allowed

Standard Error: 0.3

EXHIBIT IV-14

Digital User Views on Current Service Performance Small Systems

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.3	8.4	0.9

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.4	8.5	0.9

Sample Size: 24

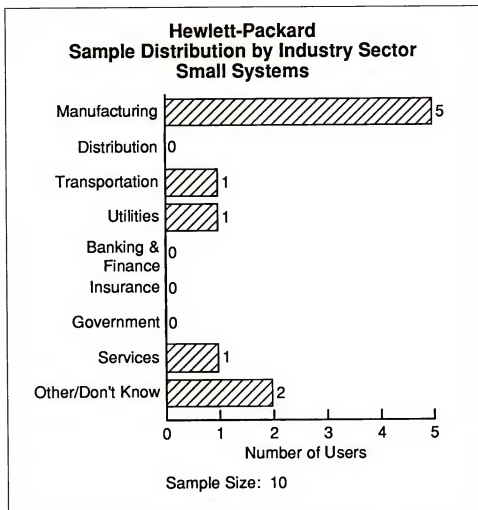
Standard Error: 0.45



C

Hewlett-Packard

EXHIBIT IV-15



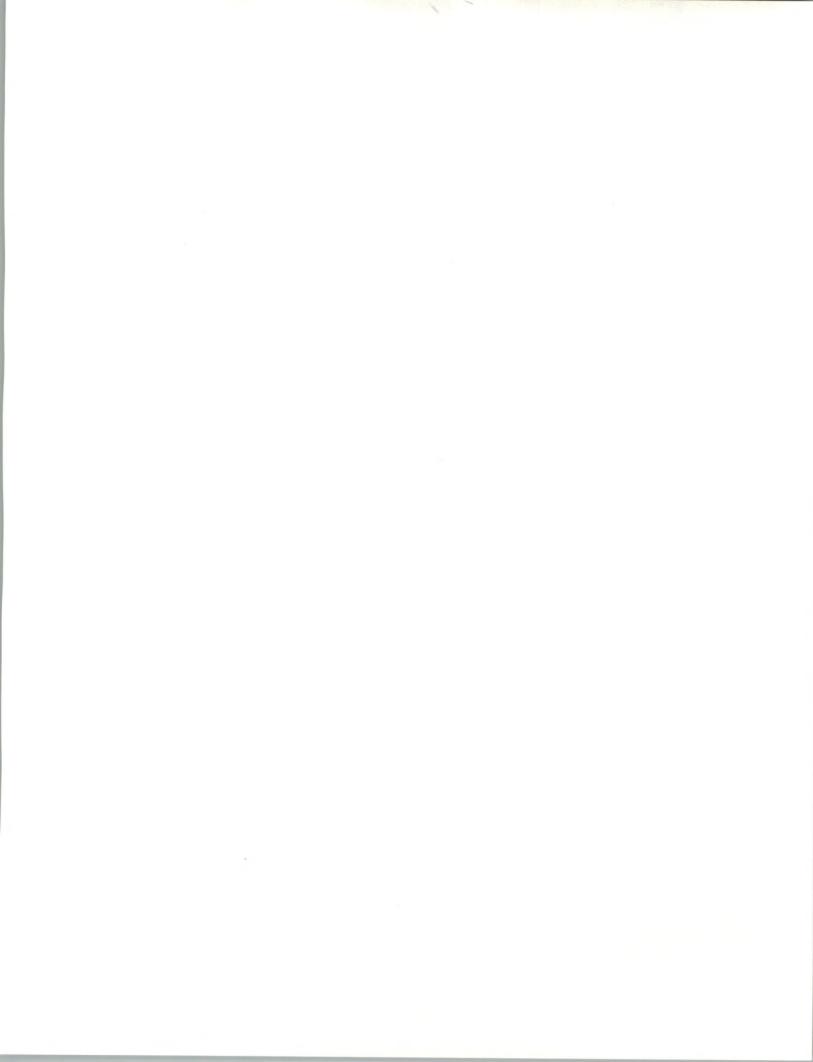


EXHIBIT IV-16

**Hewlett-Packard
Hardware Service Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.9	8.0	0.9
Engineer Skills	8.8	8.2	0.6
Problem Escalation	8.1	7.4	0.7
Documentation	7.9	7.2	0.7
Remote Diagnostics	7.7	7.0	0.7
Average	8.3	7.6	0.7

Sample Size: 10

Standard Error: 0.7

EXHIBIT IV-17

**Hewlett-Packard
Systems Software Support Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.6	6.9	1.7
Documentation	8.8	7.0	1.8
Software Installation	8.2	7.4	0.8
Provision of Updates	8.2	6.8	1.4
Remote Diagnostics	8.1	6.8	1.3
Average	8.4	7.0	1.4

Sample Size: 10

Standard Error: 0.7



EXHIBIT IV-18

Hewlett-Packard System Performance Data Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
1.3	67	0	17	16

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.9	8.0	0.9

Sample Size: 10

Standard Error: Failure Rate: 0.85

System Availability: 0.7



Hewlett-Packard Service Response and Repair/Fix Time Performance Small Systems

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
11.2	12.3	1.1	7.2	8.0	0.8	18.4	20.3	1.9

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
23.1	25.0	1.9	6.2	6.8	0.6	29.3	31.8	2.5

Sample Size: 10

Standard Error: 3.8



EXHIBIT IV-20

Hewlett-Packard Service Provider Data Small Systems

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
90	10	0	0	0

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
67	22	11	0	0	0

Sample Size: 10

Note: Multiple Responses Allowed

Standard Error: 0.5

EXHIBIT IV-21

Hewlett-Packard User Views on Current Service Performance Small Systems

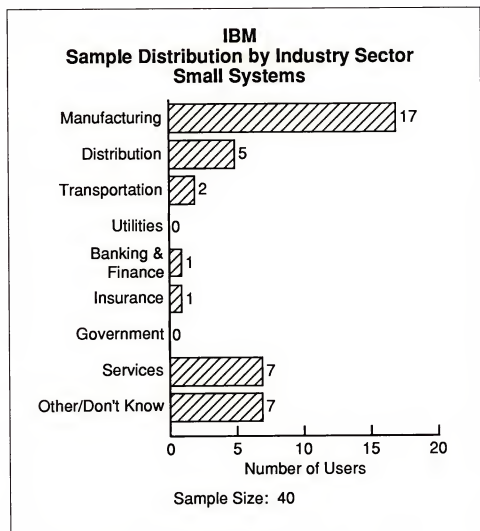
Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.7	8.3	0.4

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.4	7.6	0.8

Sample Size: 10

Standard Error: 0.7



D**IBM****EXHIBIT IV-22**

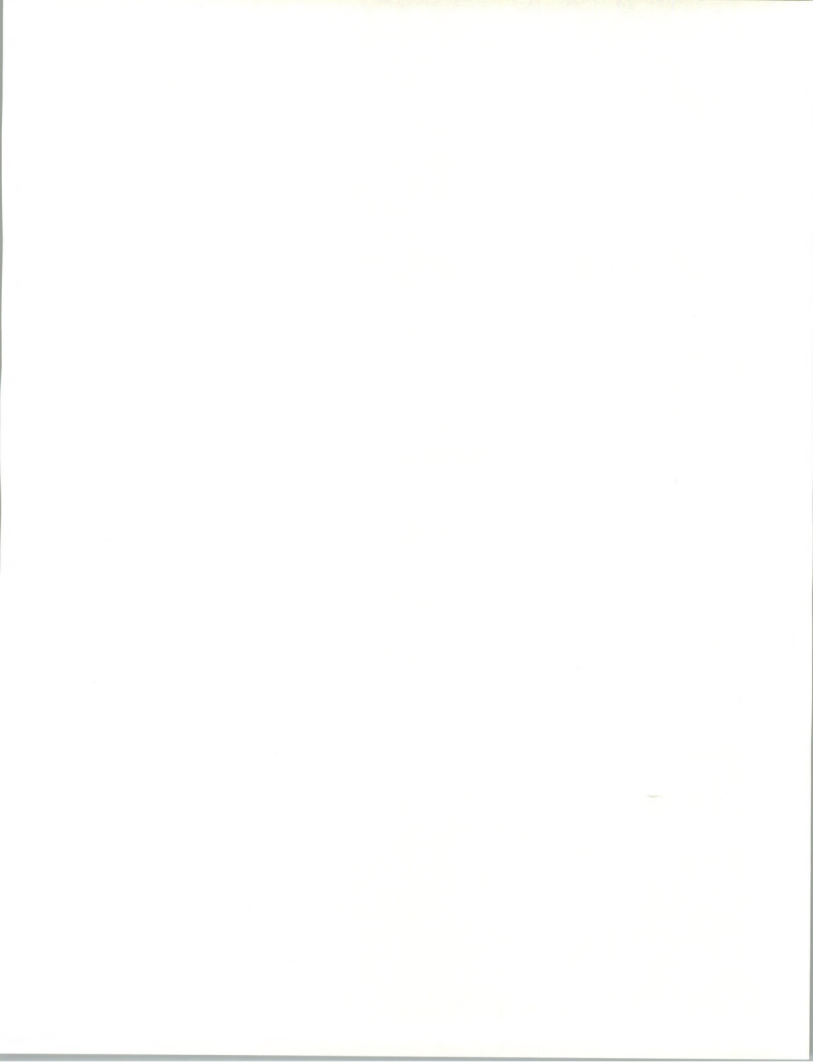


EXHIBIT IV-23

IBM
Hardware Service Satisfaction
Small Systems

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.5	8.0	0.5
Engineer Skills	8.7	7.8	0.9
Problem Escalation	7.9	7.3	0.6
Documentation	8.2	6.9	1.3
Remote Diagnostics	6.7	6.6	0.1
Average	8.2	7.4	0.8

Sample Size: 40

Standard Error: 0.35

EXHIBIT IV-24

IBM
Systems Software Support Satisfaction
Small Systems

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.6	7.8	0.8
Documentation	8.3	7.3	1.0
Software Installation	8.0	7.4	0.6
Provision of Updates	8.2	7.1	1.1
Remote Diagnostics	7.1	7.3	(0.2)
Average	8.2	7.4	0.8

Sample Size: 40

Standard Error: 0.35

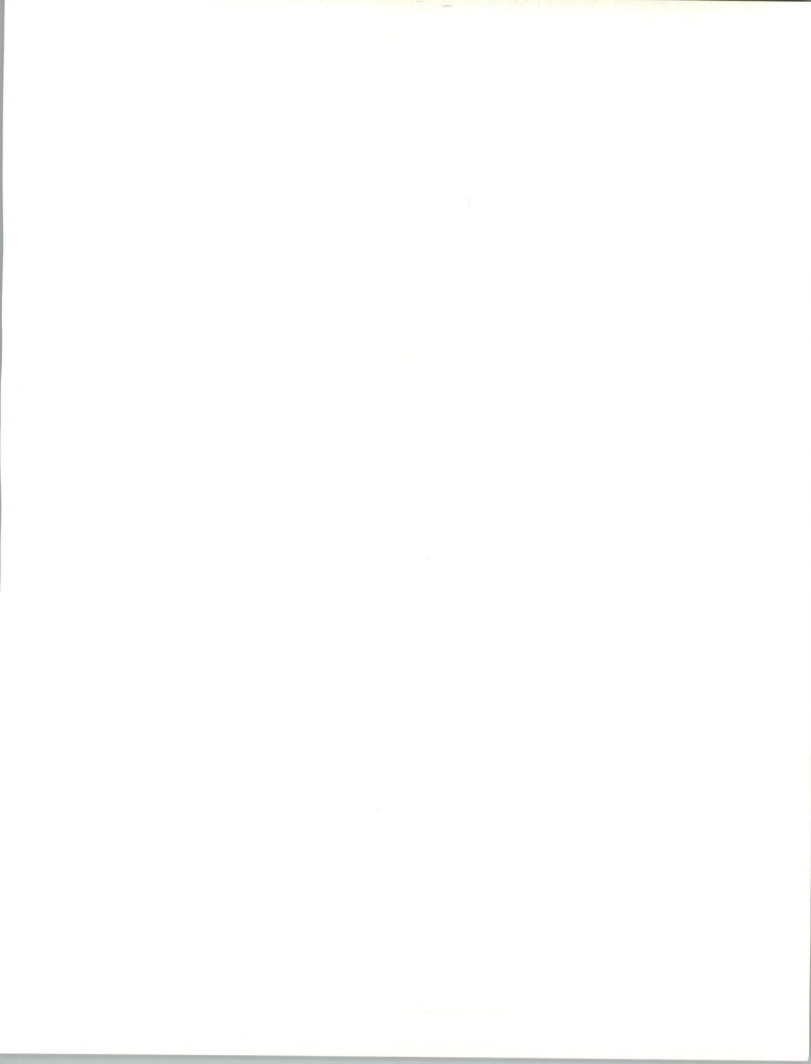


EXHIBIT IV-25

IBM System Performance Data Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
2.1	54	12	0	34

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.0	8.5	0.5

Sample Size: 40

Standard Error: Failure Rate: 0.45

System Availability: 0.35



IBM
Service Response and Repair/Fix Time Performance
Small Systems

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
4.8	5.5	0.7	3.6	4.2	0.6	8.4	9.7	1.3

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
8.2	8.2	0.0	4.7	4.8	0.1	12.9	13.0	0.1

Sample Size: 40

Standard Error: 1.9



EXHIBIT IV-27

**IBM
Service Provider Data
Small Systems**

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
65	10	28	0	3

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
53	20	3	3	15	8

Sample Size: 40

Note: Multiple Responses Allowed

Standard Error: 0.25

EXHIBIT IV-28

**IBM
User Views on
Current Service Performance
Small Systems**

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.5	8.2	0.3

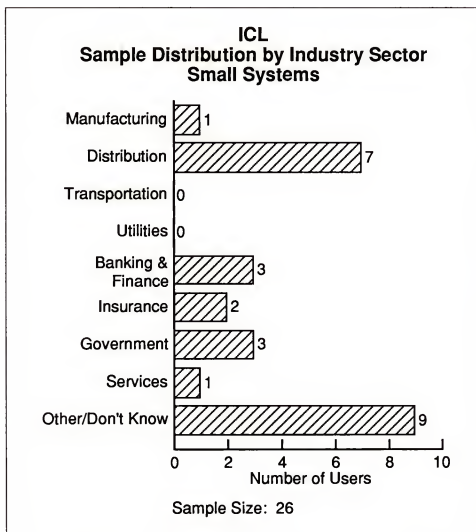
Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.9	8.0	0.9

Sample Size: 40

Standard Error: 0.35

E
ICL

EXHIBIT IV-29



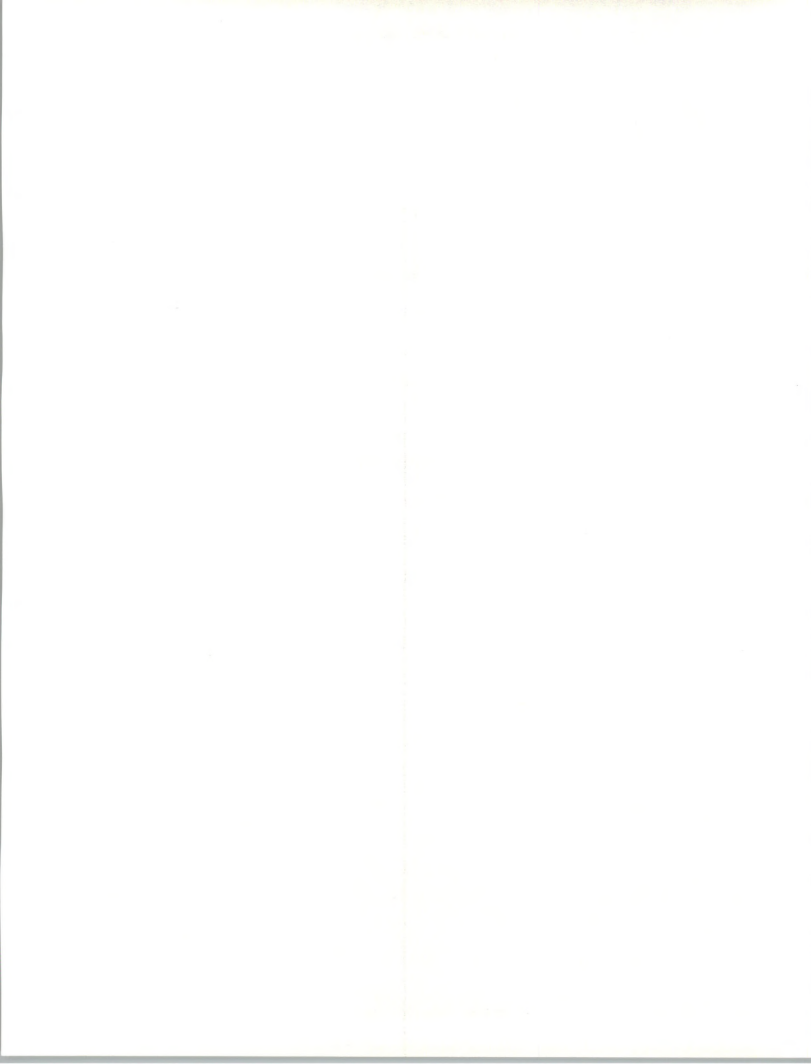


EXHIBIT IV-30

**ICL
Hardware Service Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.2	7.1	1.1
Engineer Skills	8.4	7.9	0.5
Problem Escalation	7.6	6.4	1.2
Documentation	7.5	6.3	1.2
Remote Diagnostics	8.0	6.7	1.3
Average	7.9	7.0	0.9

Sample Size: 26

Standard Error: 0.4

EXHIBIT IV-31

**ICL
Systems Software Support Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.4	8.1	0.3
Documentation	7.9	6.4	1.5
Software Installation	7.7	7.1	0.6
Provision of Updates	7.5	6.7	0.8
Remote Diagnostics	7.4	6.7	0.7
Average	7.9	7.1	0.8

Sample Size: 26

Standard Error: 0.4



EXHIBIT IV-32

ICL
System Performance Data
Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
4.4	72	11	7	10

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.5	7.4	1.1

Sample Size: 26

Standard Error: Failure Rate: 0.55

System Availability: 0.4



**ICL
Service Response and Repair/Fix Time Performance
Small Systems**

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
7.7	10.2	2.5	5.7	4.0	(1.7)	13.4	14.2	0.8

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
9.1	7.8	(1.3)	7.3	6.1	(1.2)	16.4	13.9	(2.5)

Sample Size: 26

Standard Error: 2.4

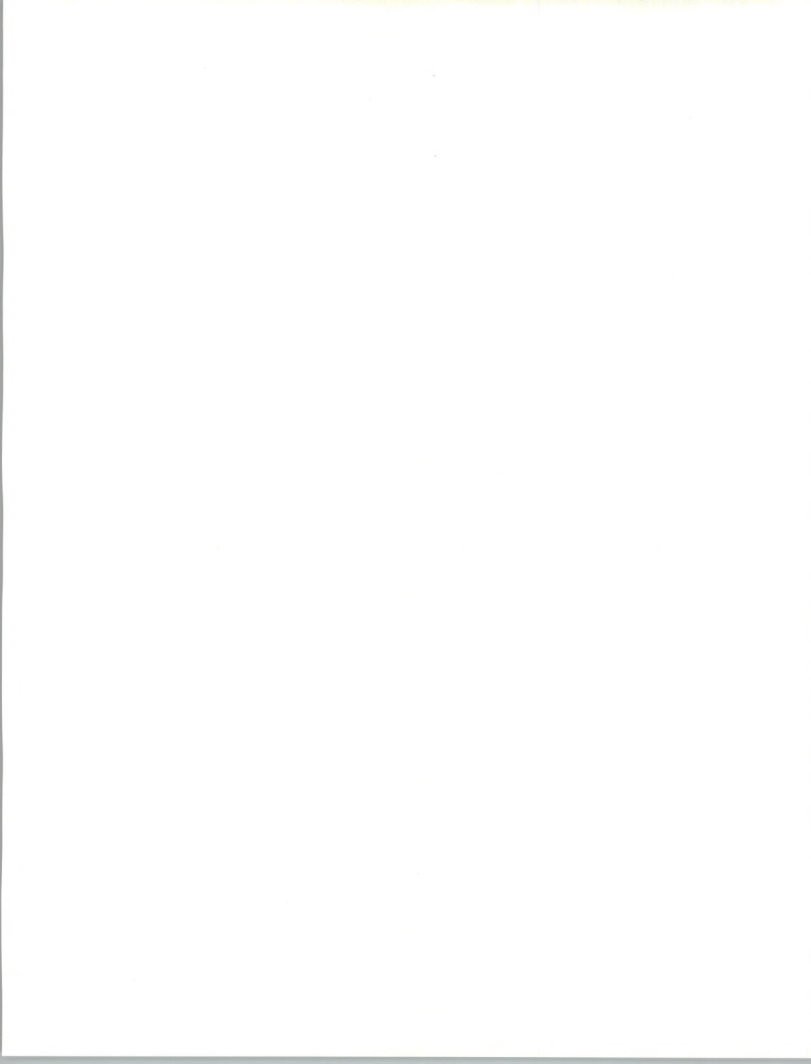


EXHIBIT IV-34

**ICL
Service Provider Data
Small Systems**

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
96	0	4	0	0

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
65	8	4	0	23	0

Sample Size: 26

Note: Multiple Responses Allowed

Standard Error: 0.3

EXHIBIT IV-35

**ICL
User Views on
Current Service Performance
Small Systems**

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.6	8.1	0.5

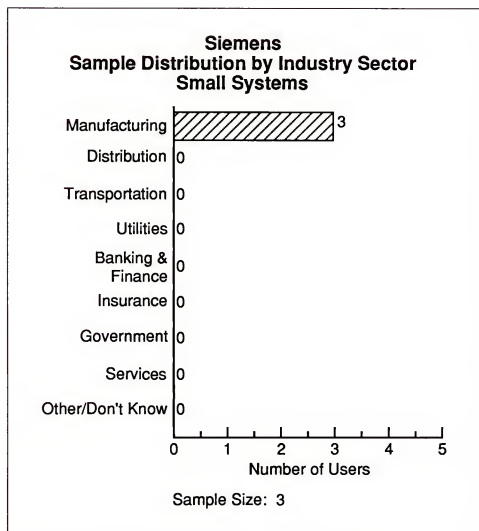
Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
8.5	7.7	0.8

Sample Size: 26

Standard Error: 0.4

F**Siemens**

EXHIBIT IV-36



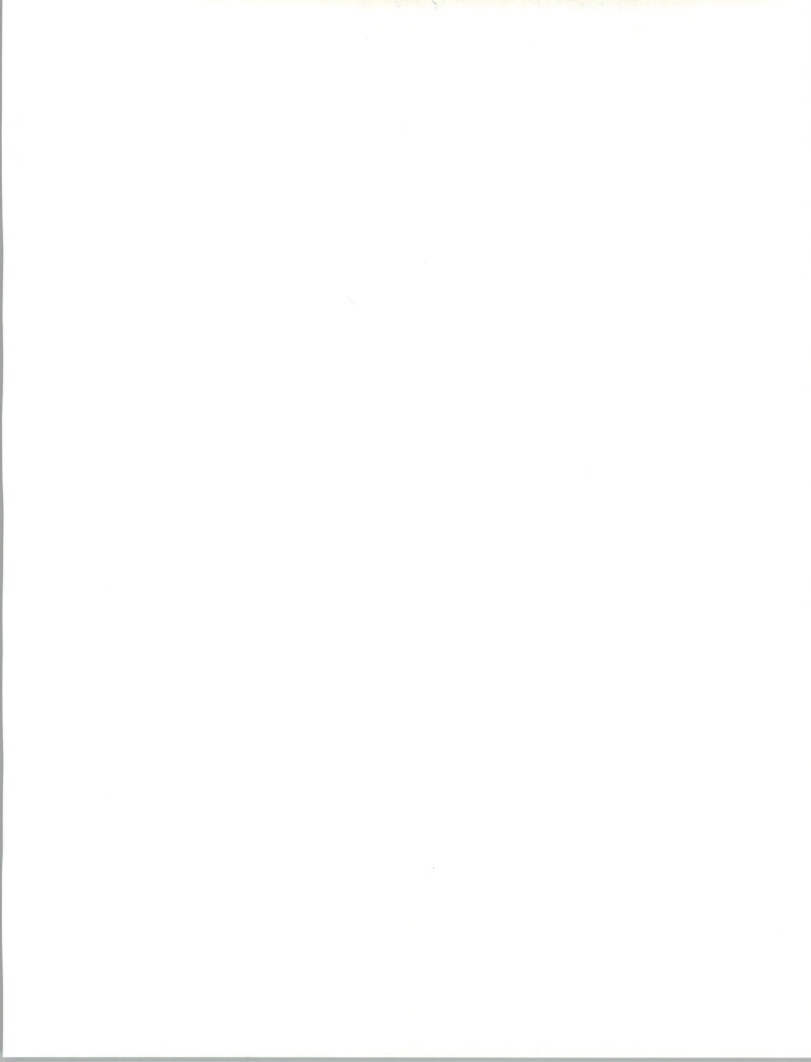


EXHIBIT IV-37

**Siemens
Hardware Service Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	9.0	8.3	0.7
Engineer Skills	9.7	9.3	0.4
Problem Escalation	7.7	7.3	0.4
Documentation	7.3	7.0	0.3
Remote Diagnostics	9.0	8.7	0.3
Average	8.5	8.1	0.4

Sample Size: 3

Standard Error: 1.3

EXHIBIT IV-38

**Siemens
Systems Software Support Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.7	7.7	1.0
Documentation	10.0	8.3	1.7
Software Installation	9.7	8.0	1.7
Provision of Updates	9.0	8.7	0.3
Remote Diagnostics	7.7	7.3	0.4
Average	9.0	8.0	1.0

Sample Size: 3

Standard Error: 1.3

EXHIBIT IV-39

Siemens System Performance Data Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
3.0	63	35	0	2

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
6.0	5.7	0.3

Sample Size: 3

Standard Error: Failure Rate: 1.6

System Availability: 1.3



**Siemens
Service Response and Repair/Fix Time Performance
Small Systems**

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
4.3	4.3	0.0	4.0	4.0	0.0	8.3	8.3	0.0

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
4.0	16.0	12.0	16.0	44.0	28.0	20.0	60.0	40.0

Sample Size: 3

Standard Error: 6.9

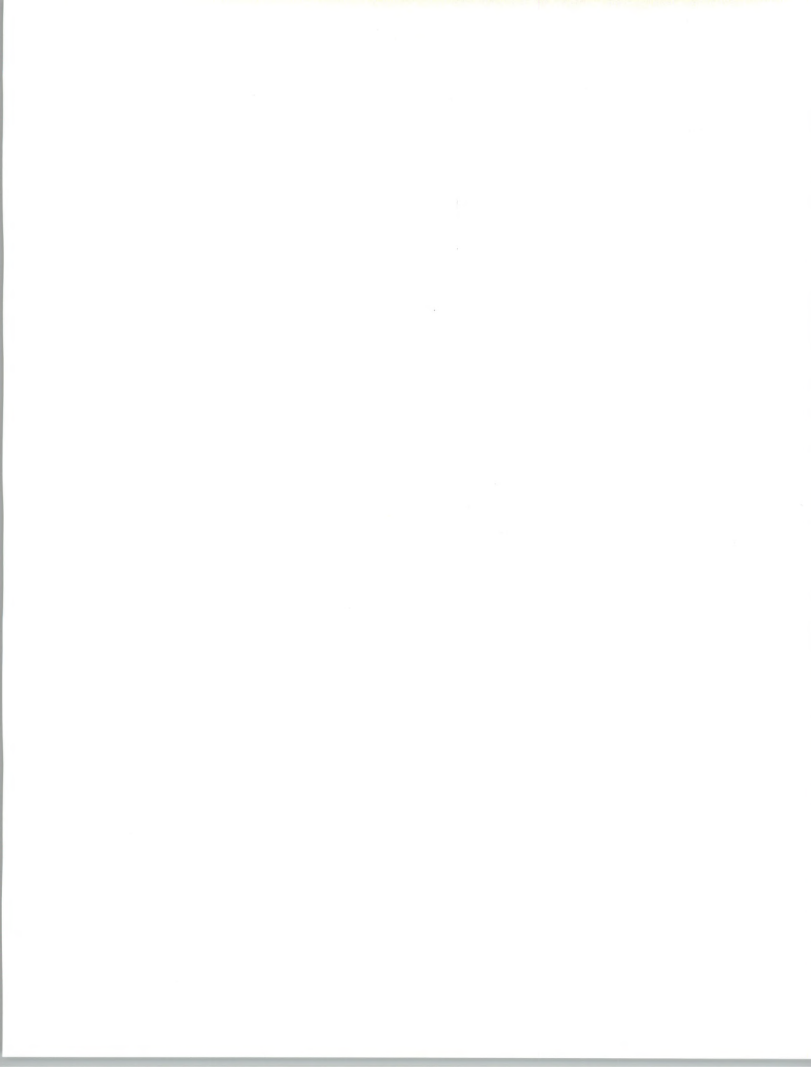


EXHIBIT IV-41

Siemens Service Provider Data Small Systems

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
67	0	13	0	0

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
67	13	0	0	0	0

Sample Size: 3

Note: Multiple Responses Allowed

Standard Error: 0.9

EXHIBIT IV-42

Siemens User Views on Current Service Performance Small Systems

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.3	8.5	0.8

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
7.5	8.0	(0.5)

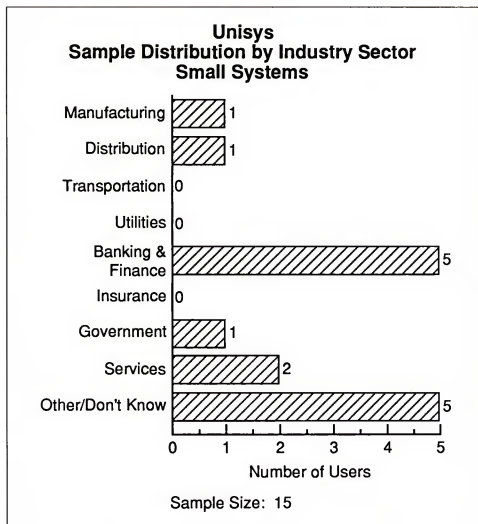
Sample Size: 3

Standard Error: 1.3



G**Unisys**

EXHIBIT IV-43



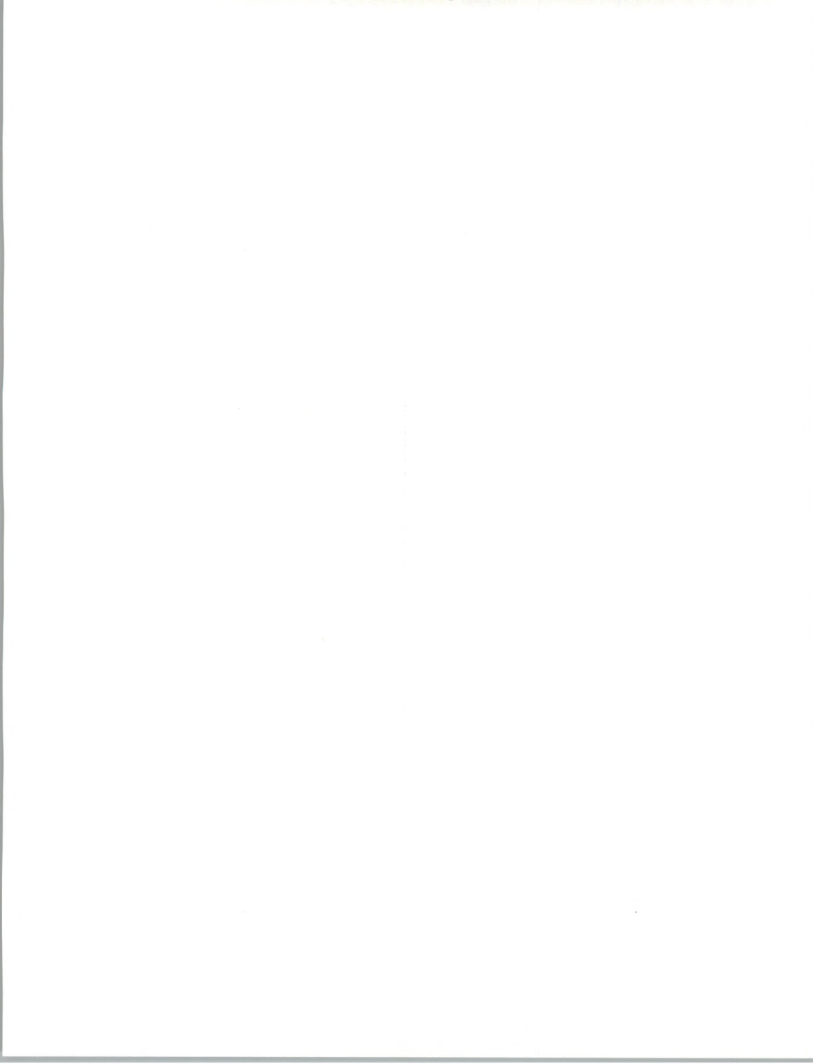


EXHIBIT IV-44

**Unisys
Hardware Service Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Spares Availability	8.3	7.6	0.7
Engineer Skills	8.6	8.0	0.6
Problem Escalation	7.8	7.4	0.4
Documentation	7.6	7.5	0.1
Remote Diagnostics	8.0	6.8	1.2
Average	8.1	7.6	0.5

Sample Size: 15

Standard Error: 0.55

EXHIBIT IV-45

**Unisys
Systems Software Support Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index Δ SI
Engineer Skills	8.7	7.1	1.6
Documentation	8.0	7.1	0.9
Software Installation	8.2	7.9	0.3
Provision of Updates	8.5	7.8	0.7
Remote Diagnostics	8.1	7.3	0.8
Average	8.3	7.5	0.8

Sample Size: 15

Standard Error: 0.55

EXHIBIT IV-46

Unisys System Performance Data Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
3.1	61	0	10	29

Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.2	8.5	0.7

Sample Size: 15

Standard Error: Failure Rate: 0.7

System Availability: 0.55



**Unisys
Service Response and Repair/Fix Time Performance
Small Systems**

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
4.7	5.9	1.2	5.9	6.1	0.2	10.6	12.0	1.4

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
7.9	7.9	0.0	7.5	9.0	1.5	15.4	16.9	1.5

Sample Size: 15

Standard Error: 3.0

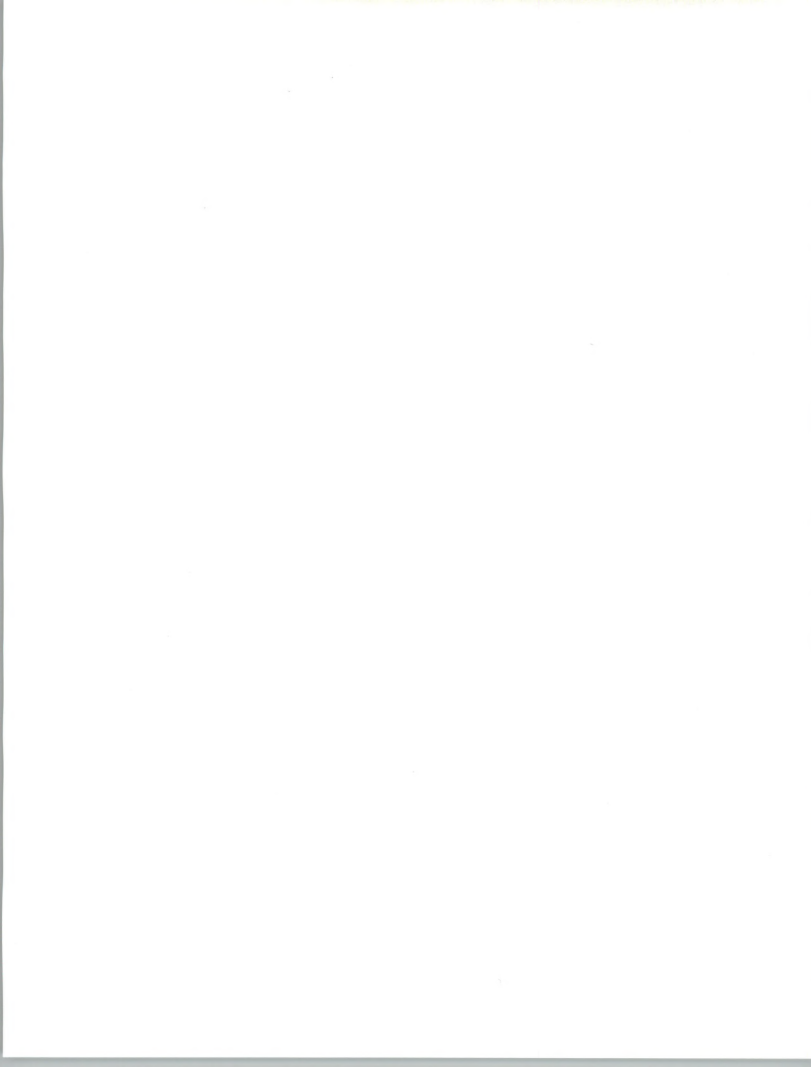


EXHIBIT IV-48

Unisys Service Provider Data Small Systems

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
80	7	20	0	0

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
80	20	0	0	7	13

Sample Size: 15

Note: Multiple Responses Allowed

Standard Error: 0.4

EXHIBIT IV-49

Unisys User Views on Current Service Performance Small Systems

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.1	8.6	0.5

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.0	8.0	1.0

Sample Size: 15

Standard Error: 0.55



H
Wang

EXHIBIT IV-50

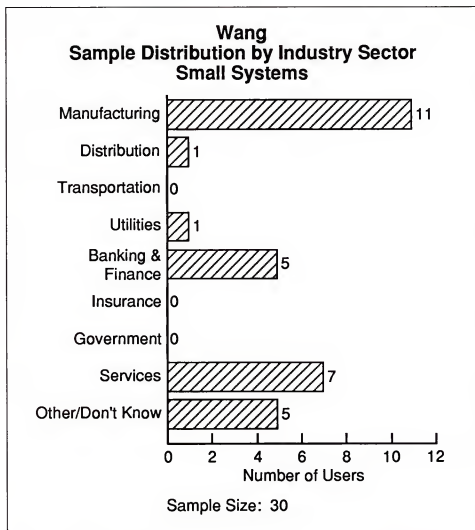


EXHIBIT IV-51

**Wang
Hardware Service Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index ΔSI
Spares Availability	9.3	7.9	1.4
Engineer Skills	9.6	8.6	1.0
Problem Escalation	8.3	7.5	0.8
Documentation	7.5	6.1	1.4
Remote Diagnostics	7.7	6.1	1.6
Average	8.6	7.4	1.2

Sample Size: 30

Standard Error: 0.4

EXHIBIT IV-52

**Wang
Systems Software Support Satisfaction
Small Systems**

Service Aspect	Importance	Satisfaction	Satisfaction Index ΔSI
Engineer Skills	9.4	8.0	1.4
Documentation	8.7	5.6	3.1
Software Installation	9.2	8.2	1.0
Provision of Updates	8.9	6.6	2.3
Remote Diagnostics	8.6	6.8	1.8
Average	9.0	7.1	1.9

Sample Size: 30

Standard Error: 0.4

EXHIBIT IV-53

Wang System Performance Data Small Systems

System Failure Rates				
Failures Per Annum	Cause of Failure (Percent)			
	Hardware	Systems Software	Applications Software	Other
1.4	72	28	NA	NA

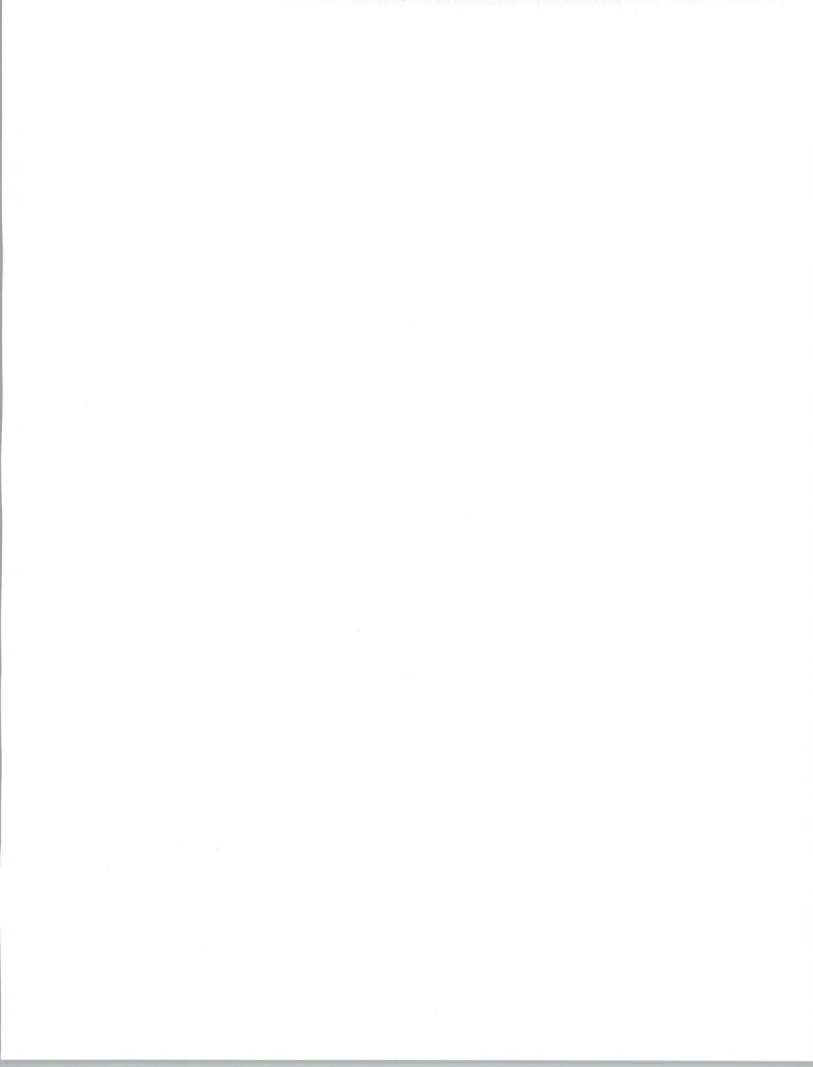
Satisfaction with System Availability		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.3	8.4	0.9

NA = Data not available for the Wang sample.

Sample Size: 30

Standard Error: Failure Rate: 0.5

System Availability: 0.4



**Wang
Service Response and Repair/Fix Time Performance
Small Systems**

Hardware Service Response/Repair Times								
Response Time (Hours)			Repair Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
6.2	10.6	4.4	6.3	4.0	(2.3)	12.5	14.6	2.1

Systems Software Support Response/Fix Times								
Response Time (Hours)			Fix Time (Hours)			Total Time (Hours)		
Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ	Acceptable Time	Experienced Time	Δ
6.0	6.2	0.2	5.4	5.1	(0.3)	11.4	11.3	(0.1)

Sample Size: 30

Standard Error: 2.2

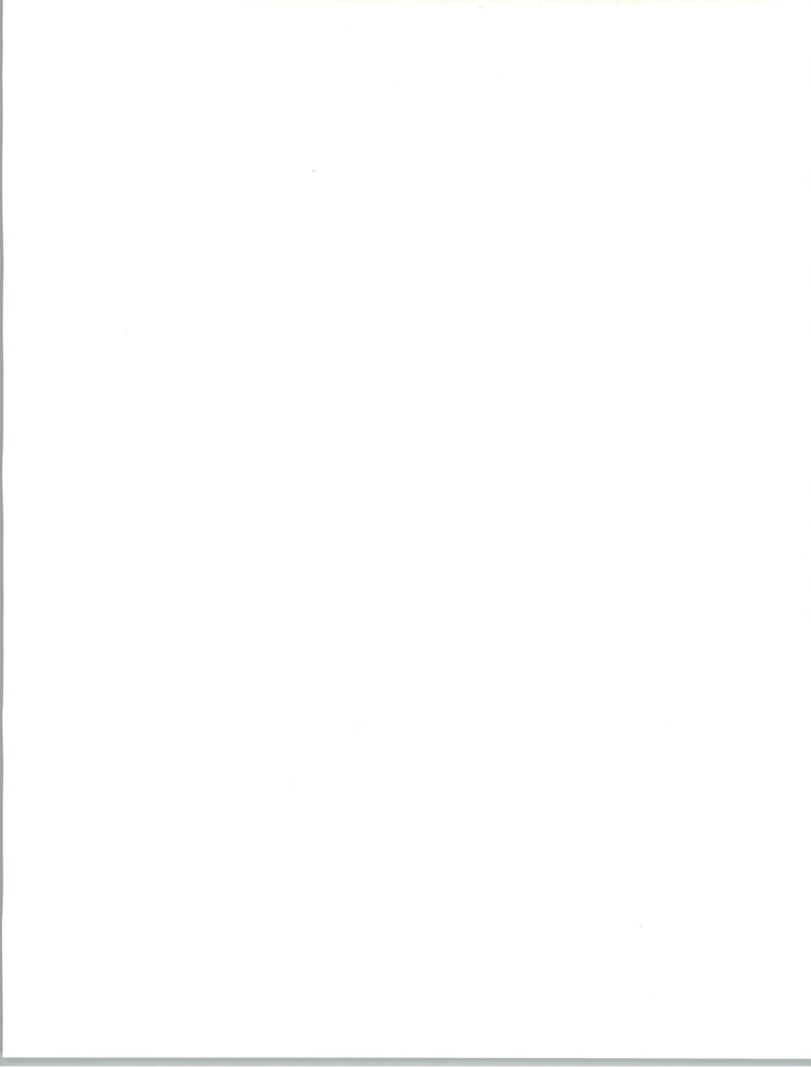


EXHIBIT IV-55

**Wang
Service Provider Data
Small Systems**

Percent Hardware Service Provided By				
Equipment Manufacturer	Dealer/Distributor	Independent Maintainer	Self	Other
84	10	6	-	-

Percent Systems Software Support Provided By					
Equipment Manufacturer	Software House	Software Product Vendor	VAR	Self	Other
57	20	7	-	13	3

Sample Size: 30

Note: Multiple Responses Allowed

Standard Error: 0.3

EXHIBIT IV-56

**Wang
User Views on
Current Service Performance
Small Systems**

Hardware Service		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.1	7.6	1.5

Systems Software Support		
Importance Rating	Satisfaction Rating	Satisfaction Index Δ SI
9.5	8.3	1.2

Sample Size: 30

Standard Error: 0.4



Appendix



Appendix: User Questionnaire

A

General

1. What is the make and model number of the main computer on your site and how many do you have?

Make _____

Model _____ (CRITICAL INFORMATION)

Units _____

2. Are you the person who is knowledgeable on the servicing of this system?
____ Yes ____ No

(If not then obtain the name of the correct person and start again.)

Name of person responsible _____

3. Do you have another system? What is the make and model number of that system and how many do you have?

Make _____

Model _____ (CRITICAL INFORMATION)

Units _____

All of the following questions that I am going to ask you are related to your
_____ system. (Write in system type.)

(To confirm, read out the make and model number.)



4. So that we can ensure that we get a proper cross-section of industry and commerce, can you tell me what is the main business sector of your company?

(Read out the list—to allow for best choice. Then circle appropriate answer.)

Business sector

- | | |
|-----------------------|---|
| • Manufacturing | 1 |
| • Distribution | 2 |
| • Transportation | 3 |
| • Utilities | 4 |
| • Banking and Finance | 5 |
| • Insurance | 6 |
| • Government | 7 |
| • Services | 8 |
| • Other/Don't Know | 9 |

B

Service Vendor Selection

I would like to ask you some questions relating to the vendor that services your computer system.

5. Could you please rate the importance of the following criteria in selecting your service vendor, on a scale of 0 to 10 (0 = low, 10 = high).

<u>Criteria</u>	<u>Rating</u>
a. Price	_____
b. Quality of service	_____
c. Guaranteed system availability	_____
d. Guaranteed availability of spare parts	_____
e. Technical expertise	_____
f. Fast response time	_____
g. Availability of software support	_____
h. Ability to provide other services	_____
i. Contract flexibility	_____
j. Ability to service other products	_____
k. Vendor reputation	_____

- 6a. Would you please tell me who services your computer system hardware? (Remind the user _____ system.)

(Please circle appropriate vendor type; multiple answers are allowed.)

- | | |
|---------------------------------|---|
| Manufacturer | 1 |
| Dealer/distributor | 1 |
| Third-party maintenance company | 1 |
| Own company | 1 |
| Other | 1 |

(If the respondent answered YES to third-party maintenance, ask the following question. If not, go to question 7.)

- 6b. I notice that your system, or part of it, is serviced by a third-party maintenance company. Could you tell me the reason why you use third-party maintenance?

(Please circle appropriate answer; multiple answers allowed.)

- Lower cost 1
- Local service 1
- Single-source service 1
- TPM service higher quality 1
- More flexible contract 1
- Other/Don't know 9

- 7a. I notice that you *do not* use a third-party maintenance company. Is there a reason for this?

(Please circle appropriate answer; multiple answers allowed.)

- Satisfied with manufacturer 1
- Manufacturer has an advantage 1
- TPM cannot support software 1
- Tied to manufacturer with contract 1
- Fear of system supplier response 1
- Considered and rejected TPM 1
- TPM financial weakness 1
- Unaware of TPM 1
- Other/Don't know 9

- 7b. Assuming you were approached by a TPM company, at what level of price reduction would you consider using a TPM vendor to service your computer hardware?

(Please circle appropriate answer. Only *one* answer allowed.)

- 1% - 10% 1
- 11% - 20% 1
- 21% - 30% 1
- 31% - 40% 1
- 41% - 50% 1
- 50%+ 1
- Unwilling at any price 1
- Other/Don't know 9



8. How important is it that your service vendor communicates with you regularly and effectively to advise you of, for example:

___ The status of your system	>	
___ Possible problems	>	
___ Repair plans	>	INTERVIEWER
___ Availability of spare parts	>	PROMPTS
___ Routine visits	>	
___ Hardware and software changes	>	

Could you please provide an importance and satisfaction rating on a scale of 0 to 10 where 0 is of no importance or indicates total dissatisfaction and 10 is at top importance or indicates that you are fully satisfied?

- Importance ____
- Satisfaction ____

- 9a. Would you prefer all hardware maintenance and software support to be provided by one service vendor at each site? If yes, what would your interest level be?

Level of interest: (please circle)

Low Medium High

(Circle answer.)

Yes 1

No 1

Don't know 9

(If the respondent answered YES, ask:)

- 9b. Who would you prefer that vendor to be?

(Please circle appropriate answer; multiple answers allowed.)

- The manufacturer of your main hardware 1
- Dealer/distributor/VAR 1
- TPM company 1
- One of your hardware manufacturers 1
- Other/Don't know 9

Note: VAR is a value-added reseller.

C

Hardware Maintenance

I would now like to ask you some questions about the hardware maintenance of your computer system. (Reaffirm the system type _____.)

Some of the questions are scaled with ratings from 0 to 10. Zero (0) represents zero importance or satisfaction, 5 is average, and 10 represents top importance or full satisfaction.

10. What is your rating for the importance of hardware maintenance to your business, and how satisfied are you with your service vendor's performance?
- Importance rating _____
 - Satisfaction rating _____
11. If we define **systems availability** as the percentage of your normal working hours that the system is operational (disregarding non-critical peripheral breaks), what percentage has that been for your system over the last twelve months?
- Percentage _____%
12. How many times each year does your system fail completely for a period of greater than one hour?
- Per year _____

And what percentage of these system failures are due to:

Hardware _____%

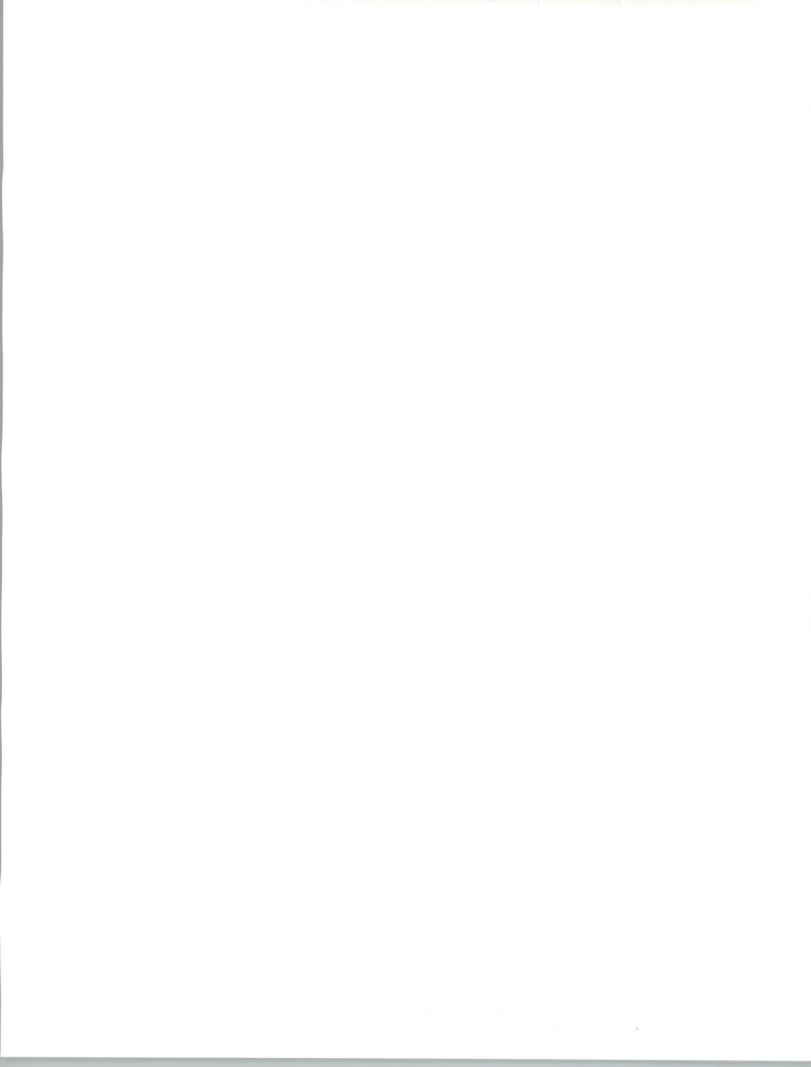
Systems software _____%

Applications software _____%

Other (i.e. power failure) _____%

(Please check that percentages add up to 100.)

13. What is your rating for the importance of **systems availability** (scale 0 - 10), and what is your level of satisfaction?
- Importance rating _____
 - Satisfaction rating _____



14. Defining **hardware response time** as the time it takes between reporting a fault and the arrival of the service engineer on site (in working hours, that is to say 8 hours = 1 working day), what response time (in hours) do you find acceptable and what did you actually experience as an average over the last twelve months?
- Acceptable _____ Hours
 - Experienced _____ Hours
15. If **repair time** is defined as the time taken to get the system fully operational from the time the engineer arrives on site, then what time do you find acceptable (in working hours) and what time did you experience in the last twelve months?
- (Note: 8 hours = 1 working day/shift)
- Acceptable _____ Hours
 - Experienced _____ Hours
16. I would now like to go through a list of five aspects of hardware maintenance and ask you to give both an importance and satisfaction rating for each (scale 0 - 10).

ImportanceSatisfaction

- | | | |
|-----------------------|-------|-------|
| • Spares availability | _____ | _____ |
| • Engineer skills | _____ | _____ |
| • Problem escalation | _____ | _____ |
| • Documentation | _____ | _____ |
| • Remote diagnostics | _____ | _____ |
17. How important is it that your system supplier provide a hardware **consultancy/planning** service to support your operations, and how satisfied are you with the service provided? (Scale 0 - 10)
- Importance _____
 - Satisfaction _____

18. If possible, I would like you to provide some information on hardware maintenance pricing.
- a. What percentage price increase or decrease did you pay for hardware maintenance in the year 1989?
- Increase _____ %
 - Decrease _____ %
 - No change 1 (circle)
- b. What do you expect the price changes for **hardware maintenance** to be in the future, in percentage terms per annum?
- Increase _____ %
 - Decrease _____ %
 - No change 1 (circle)
- c. How important do you rate hardware maintenance pricing, and how satisfied are you with the price you currently pay? (Scale 0 - 10)
- Importance rating _____
 - Satisfaction rating _____
19. Which type of hardware maintenance contract do you currently have on the main part of your system?
- (Please circle appropriate answer; only one answer allowed.)
- Warranty 1
 - Three-year 1
 - One-year 1
 - Time and materials 1
 - None 1



D**Software Support**

I would like to ask you some questions relating to the service you get from your software support vendor.

These questions relate to systems software—not applications.

As before, some of the questions are scaled with ratings from 0 to 10. Zero (0) represents zero importance or satisfaction, 5 is average, and 10 is top importance or full satisfaction.

20. Who supports your systems software?

(Please circle appropriate answer; multiple answers allowed.)

- Hardware manufacturer 1
- Software house 1
- Software product vendor 1
- Value-added reseller (VAR) 1
- In-house 1
- Other/Don't know 9

21. What is your rating for the importance of systems software support to your business, and what is your satisfaction with your vendor's systems support activities? (Scale 0 - 10)

- Importance rating ____
- Satisfaction rating ____

22. What percentage of systems software problems are solved by telephone, and how long does this take in elapsed time from the time it is alerted to the service engineer?

- Solved by phone _____%
- Elapsed time _____ Hours

23. For those problems not possible to solve over the telephone, what **response time** would you find acceptable, and what time (on average and in working hours) have you experienced over the last twelve months? (Take **response time** to mean from the time the problem is reported to the arrival of the engineer on site.)

- Acceptable _____ Hours
- Experienced _____ Hours



24. If **fix time** is defined as the time taken to get the system fully operational from the arrival of the engineer on site, then what time (in working hours) do you find acceptable, and what did you experience over the last twelve months?
- Acceptable _____ Hours
 - Experienced _____ Hours
25. I would like to go through a list of five aspects of **systems software support** and ask you to give an importance and a satisfaction rating for each. (Scale 0 - 10)
- | | <u>Importance</u> | <u>Satisfaction</u> |
|-------------------------|-------------------|---------------------|
| • Engineer skills | _____ | _____ |
| • Documentation | _____ | _____ |
| • Software installation | _____ | _____ |
| • Provision of updates | _____ | _____ |
| • Remote diagnostics | _____ | _____ |
26. How important is it that your system supplier provide a systems software **consultancy/planning** service to support your operations, and how satisfied are you with the service provided? (Scale 0 - 10)
- Importance rating _____
 - Satisfaction rating _____
27. If possible I would like you to provide some information on **systems software support pricing**.
- a. What percentage price increase or decrease did you pay for systems software support in the year 1989?
 - Increase _____%
 - Decrease _____%
 - No change 1 (circle)
 - b. What do you expect the price changes for systems software support to be in the future, in percentage terms per annum?
 - Increase _____%
 - Decrease _____%
 - No change 1 (circle)



27. (cont.)

- c. How important do you rate systems software support pricing, and how satisfied are you with the price you currently pay? (Scale 0 - 10)

- Importance rating _____
- Satisfaction rating _____

28. Which type of systems software support contract do you currently have?

(Please circle appropriate answer. Only *one* answer allowed.)

- Support included in software license fee 1
- Three-year contract 1
- One-year contract 1
- Ad hoc 1
- None 1

E**Other Services**

29. To conclude this questionnaire, I am particularly interested in obtaining your views on other services or modified current service offerings that your service suppliers could provide that would help to improve the running of your computer systems.

Could you say which of the following services your service vendor is currently contracted to supply and which you would like your service vendor to provide? Also, could you give a level of interest rating against each in the range 0 to 10 where 0 = no interest, 5 = average interest and 10 = must have?

(Please circle appropriate answer and all LOI rating.)

	<u>Currently Contracted</u>	<u>Require</u>	<u>LOI</u>
• Configuration planning	1	1	_____
• Capacity planning	1	1	_____
• Environmental planning	1	1	_____
• Cabling	1	1	_____
• Software evaluation	1	1	_____



	<u>Currently Contracted</u>	<u>Require</u>	<u>LOI</u>
• Consultancy	1	1	_____
• Network planning	1	1	_____
• Network management	1	1	_____
• Disaster recovery	1	1	_____
• Facilities management	1	1	_____
• Problems management	1	1	_____
• Applications software support	1	1	_____

These last questions complete the questionnaire. I would like to thank you on behalf of INPUT for helping us to complete this survey. To express our appreciation for your time, we will be sending you a "thank you" package containing a summary of the results from our survey.

Again, thank you for your time.

